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# Effects of Pathogenic and Toxic Materials Transported via Cooling Device Drift
Volume 2. Appendices

H2M Corp.
Farmindgale, NY

Prepared for

Industrial Environmental Research Lab.
Research Triangle Park, NC

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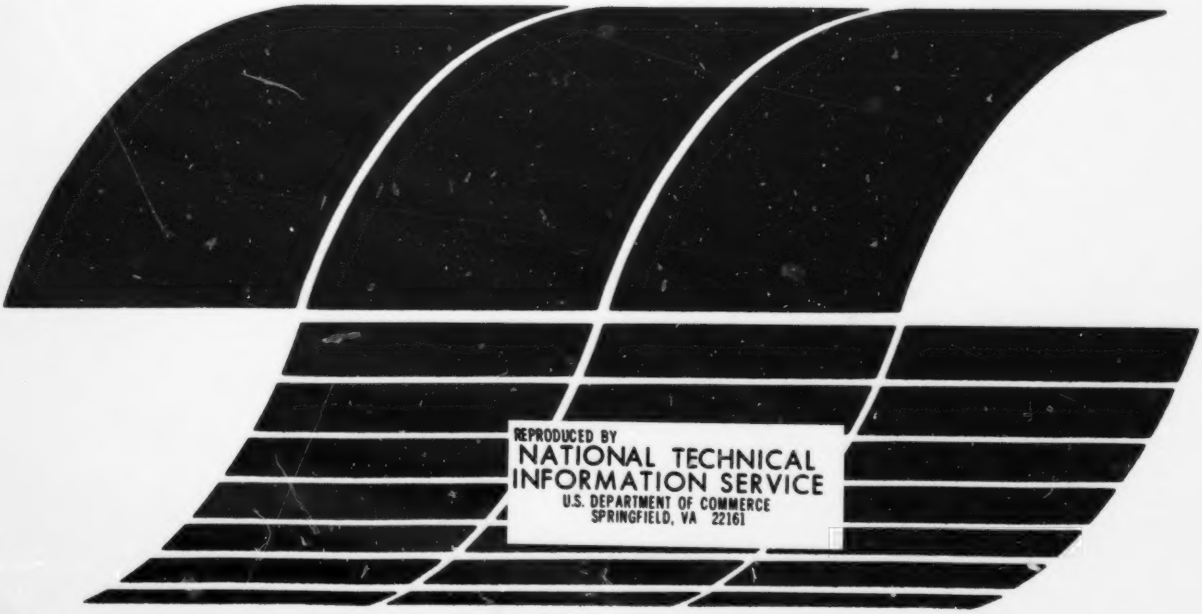
# Effects of Pathogenic and Toxic Materials Transported Via Cooling Device Drift -

## Volume 2. Appendices

## Interagency Energy/Environment R&D Program Report



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16. ABSTRACT

The report describes a mathematical model that predicts the percent of the population affected by a pathogen or toxic substance emitted in a cooling tower plume, and gives specific applications of the model. Eighty-five pathogens (or diseases) are cataloged as potentially occurring in U.S. waters, but there is insufficient data to predict the probability of occurrence or relate their occurrence to public health, population, or pollution. Sixty-five toxic substances are cataloged as potentially occurring in U.S. waters, but the actual number is probably many times the EPA-supplied list. Toxic concentrations to persons, animals, and plants are known for only a few of the chemicals: most toxic levels can be only inferred from animal studies. In the population as a whole, the epidemiological impact of a pathogen is a function of age, sex distribution, racial (genetic) distribution, general health and well-being, prior exposure, and immunological deficiency states. While cooling device drift may not be directly responsible for epidemics, it may potentiate the burden in an already weakened population, raising a segment of the population into the clinical state. The effect of toxic substances is difficult to evaluate because of inadequate data on humans. The effect is a function of concentration in susceptible tissue, and is much less dependent than pathogens on host resistance.

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|---|---|---|---|---|
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| Cooling Towers | Epidemiology | Stationary Sources | 13A, 07A | |
| Drift | Mathematical Models | | 14B | 12A |
| Plumes | | | 21B | |
| Pathology | | | 06E | |
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by

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Contract No. 68-02-2625
Program Element No. INE624A

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Office of Research and Development
Washington, DC 20460

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# ABSTRACT

The report describes a mathematical model that predicts the percent of the population affected by a pathogen or toxic substance emitted in a cooling tower plume, and gives specific applications of the model. Eighty-five pathogens (or diseases) are cataloged as potentially occurring in U.S. waters, but there is insufficient data to predict the probability of occurrence or relate their occurrence to public health, population, or pollution. Sixty-five toxic substances are cataloged as potentially occurring in U.S. waters, but the actual number is probably many times the EPA-supplied list. Toxic concentrations to persons, animals, and plants are known for only a few of the chemicals: most toxic levels can be only inferred from animal studies. In the population as a whole, the epidemiological impact of a pathogen is a function of age, sex distribution, racial (genetic) distribution, general health and well-being, prior exposure, and immunological deficiency states. While cooling device drift may not be directly responsible for epidemics, it may potentiate the burden in an already weakened population, raising a segment of the population into the clinical state. The effect of toxic substances is difficult to evaluate because of inadequate data on humans. The effect is a function of concentration in susceptible tissue, and is much less dependent than pathogens on host resistance.

# INTRODUCTION TO CATALOG

Cooling devices may utilize make-up water from a variety of sources, including polluted water and treated wastewater. The use of these waters may present a potential problem of aerosolizing entrained pathogenic organisms and toxic chemicals, and disseminating them over large areas and populations. Such aerosol drift could produce a significant health hazard to humans, other animals and vegetation, causing infectious disease, allergic reaction and toxicity in both clinical and subclinical manifestations.

The pathogens and toxins to be addressed are those which are potentially present in cooling device make up water. The pathogens listed have been known to occur in U. S. waters and will survive the physical and chemical environment in the cooling devices as well as in aerosol drift transport. The list of chemicals was provided by EPA Corvallis and are known toxins and carcinogens.

The pathogens and toxins which were determined to warrant consideration were coordinated into the Aerosol Drift Health Hazard Assessment catalog which follows. This format organized the information required for the assessment of the potential health hazards when contaminated water is used for make-up water. It presents the hazards that could occur if the toxins or pathogens were present and the factors which contribute to this. It is the responsibility of the device designer or operator to ascertain if such pathogens or toxins are present, and to take appropriate measures to remedy the situation.

Toxins and pathogens are individually listed on separate sheets in the Aerosol Drift Health Hazard Assessment catalog, Appendix A. Each sheet contains the following information.

Name: Group or species of pathogen, chemical substance or chemical group.

Identification:

Disease or Effect: Caused by the pathogen or toxin, including the chemical manifestation and severity.

Epidemiological Significance: Transmission of the disease or effect through aerosol drift among humans, other animals and plants.

Host Sensitivity/Susceptibility: Host capture range; dosage required to incur disease or effect.

## Occurrence:

Polluted Water Source: Origin of chemical or pathogen, e.g., industrial, municipal or agricultural wastewater.

Geographical Location: Regions in which there is a greater probability of occurrence.

Occurrence : Range of concentration of pathogens or toxins found in polluted water source.

## Integrity/Survivability:

### Integrity Parameters

In Surface Water: Chemical change with time, synergistic effects with chemicals in water.

In Treated Effluent: Concentration reduction by treatment, chemical change caused by treatment.

In Cooling Device: Temperature effects, salinity effects, effects caused by a change in form.

Control Methods in Water or Effluents: Methods of control specific to chemical.

### Survivability Parameters

In Surface Water: Susceptibility to temperature, salinity, pH, exposure time, and any other contributing factors.

In Treated Effluent: Susceptibility to chlorination, ozonation, pH, settling, etc.

| | |
|---|---|
| In Cooling Device: | Susceptibility to salinity, temperature, pH, residence time. |
| Control Methods in Water or Effluents: | Methods of control specific to this organism |

## Aerosolization:

### Integrity Parameters

| | |
|---|---|
| Probability of Passage into Aerosol State: | Aerosolization and volatility of chemical. |
| Integrity in Air and/or Aerosol Fomites: | Effects of temperature, pollutants, radiation, salt of substances. |

### Survivability Parameters

| | |
|---|---|
| Probability of Passage into Aerosol State: | Considering organism size, density, form. |
| Survival in Air and/or Aerosol Fomites: | Effects of temperature, relative humidity, radiation, pollutants, susceptibility to dessication; residence time. |

## Summary:

Concluding remarks at the end of each page will indicate whether this pathogen or chemical should be of particular interest due to its frequent usage or severe toxicity; or if it warrants consideration as a potentially major health risk.

Appendix B is the Aerosol Drift Direct Effects Assessment catalogue. This section organizes the assessment of the actual effects which would become evident in proximate humans, vegetation and other animals should contaminated water be used for make-up water. The manifestations may be imminently recognizable or may not surface for an extended period of time. This catalogue is designed to allow comparison between humans, animals and vegetation for each given pathogen and toxin.

Within this section there have been several additions to the original list of pathogens and toxins. During the research (investigation) process, it was determined that additional pathogens and toxins warranted consideration. For some of the pathogens and toxins direct effects were not discussed for all three categories of humans, animals and vegetation. If the effects of a particular toxin or pathogen are not applicable to any of the three subjects it is stated as such on the sheet. Sections left blank indicate a lack of available information.

The toxins and pathogens are listed individually on separate sheets. Each sheet of the Direct Effects Assessment catalogue contains the following information for each subject (human, vegetation and animal).

| | |
|---|---|
| Name: | Group or species of pathogen, chemical substance or chemical group. |
| Disease or Effect: | Clinical and subclinical manifestation; acute and chronic symptoms. |
| Epidemiological Significance: | Transmission of the disease or effect through aerosol drift among humans, other animals and plants. |
| Host Sensitivity/ Susceptibility: | Host capture range; dosage required to incur disease or effect. |
| Comments: | Concluding remarks at the end of each page will indicate whether this pathogen or toxin should be of particular interest due to its frequency of presence, severe effects, and whether it warrants consideration as a major health risk. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**NAME:** **ABSIDIA CORYMBIFERA**

## IDENTIFICATION

DISEASE OR EFFECT:
a) Mucormycosis
b) Phycomycosis
c) Zygomycosis

EPIDEMIOLOGICAL SIGNIFICANCE: a&b) It is possible that this organism will cause these diseases and be transmitted.
c) This organism will probably cause this disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Hosts will rarely contract these diseases unless their immune systems are weakened.
c) Few hosts contract this disease.

## OCCURRENCE

POLLUTED WATER SOURCE: The organism is found here.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism occurs rarely.

## INTEGRITY/SURVIVABILITY

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: The organism can survive in treated effluent.

IN COOLING DEVICE: a,c) It is doubtful the organism will survive here and then cause these diseases.
b) The organism will survive here and cause this disease.

CONTROL METHODS IN WATER OR EFFLUENTS: a,c) The organism can be controlled by physical and chemical means.
b) The organism can be controlled by physical chemical and biological means.

## AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites.

## SUMMARY

The organism may be found in aerosol drift and would be of serious cause for concern for susceptible hosts.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **ABSIDIA RAMOSA** |
| | DISEASE OR EFFECT: a) Mucormycosis<br>b) Phycomycosis<br>c) Zygomycosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: a&b) It is possible that this organism will cause these diseases, and be transmitted.<br>c) This organism will probably cause this disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Hosts will rarely contract these diseases unless their immune systems are weakened.<br>c) Few hosts contract this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: The organism can survive in treated effluent.<br>IN COOLING DEVICE: a,c) It is doubtful the organism will survive here and then cause these diseases.<br>b) The organism will survive here and cause this disease.<br>CONTROL METHODS IN WATER OR EFFLUENTS: a,c) The organism can be controlled by physical and chemical means.<br>b) The organism can be controlled by physical chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites. |
| SUMMARY | The organism may be found in aerosol drift and would be of serious cause for concern for susceptible hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: ACTINOMYCES ISRAELI |
| | DISEASE OR EFFECT: a) Actinomycosis<br>b) Pneumonia - necrotizing & lung abscess<br>EPIDEMIOLOGICAL SIGNIFICANCE: a & b) Unlikely that the organism will cause disease and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Some hosts are susceptible and usually when their immune systems are weakened by illness. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found and can survive here.<br>GEOGRAPHICAL LOCATION: The organism is found universally and particularly in human-municipal areas.<br>OCCURRENCE: The organism occurs occasionally. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: It may survive in treated effluent.<br>IN COOLING DEVICE: It may survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical (filtration, irradiation) and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites. |
| SUMMARY | The organism will probably be found in aerosol drift. Actinomycosis is not highly contractible so there is only a real cause for concern for compromised hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: ACTINOMYCES KERATOLYTICA<br>DISEASE OR EFFECT: Pitted keratolysis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is possible that it will cause disease and may be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Rarely do hosts contract the disease and only when their immune system has been weakened by illness. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found and can survive in this water.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in this environment.<br>IN TREATED EFFLUENT: It is doubtful the organism may survive here.<br>IN COOLING DEVICE: The organism can survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It will survive in air and/or aerosol fomites. |
| SUMMARY | The organism is likely to be found in aerosol drift but it is unlikely to be a cause for public concern except for compromised hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **ACTINOMYCES spp.**<br>DISEASE OR EFFECT: Actinomycosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: Unlikely that this organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Host will rarely contract this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: It is doubtful that this organism could be found or survive in these waters.<br>GEOGRAPHICAL LOCATION: Can be found in human-municipal and agricultural-animal husbandry environments.<br>OCCURRENCE: Occurs occasionally. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Can survive in surface water.<br>IN TREATED EFFLUENT: Doubtful that organism could survive.<br>IN COOLING DEVICE: Doubtful that organism could survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: It is possible for the organism to aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It is possible for the organism to survive in air or aerosol fomites. |
| SUMMARY | It is doubtful that this organism will be found in an aerosol drift. If it did, there is still no real cause for public concern as it is not highly contractable. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME:<br>**ASPERGILLUS FLAVUS** |
| | DISEASE OR EFFECT: a) Aspergillosis - aspergilloma fungus ball, - disseminated, - of nasal sinuses.<br>b) Intraoccular infections<br>c) Otitis externa<br>EPIDEMIOLOGICAL SIGNIFICANCE: a) It is possible for this organism to be transmitted and cause disease. b & c) It is unlikely for this organism to cause these diseases.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a, b, & c) Only susceptible host will contract this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: a, b & c) Organism may be found and survive in this water.<br>GEOGRAPHICAL LOCATION: a, b & c) Organism is found universally.<br>OCCURRENCE: a) The disease occurs often.<br>b & c) The diseases occur rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water.<br>IN TREATED EFFLUENT: Organism can survive but it is doubtful.<br>IN COOLING DEVICE: Organism can survive in cooling devices.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical and biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | The organism will survive in aerosol drift but presents no real cause for public concern except for susceptible hosts. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: ASPERGILLUS NIDULANS |
| | DISEASE OR EFFECT: Aspergillosis - aspergilloma fungus ball, - disseminated, - of nasal sinuses. |
| | EPIDEMIOLOGICAL SIGNIFICANCE: It is possible for this organism to be transmitted and cause disease. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: Only susceptible host will contract this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive in this water. |
| | GEOGRAPHICAL LOCATION: Organism is found universally. |
| | OCCURRENCE: The disease occurs often. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water. |
| | IN TREATED EFFLUENT: Organism can survive but it is doubtful. |
| | IN COOLING DEVICE: Organism can survive but it is doubtful. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical and biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | The organism will survive in aerosol drift but presents no real cause for public concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **ASPERGILLUS NIVEUS**<br>DISEASE OR EFFECT: Aspergillosis - aspergilloma fungus ball, - disseminated, - or nasal sinuses.<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is possible for this organism to be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Only susceptible hosts will contract this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found universally.<br>OCCURRENCE: The disease occurs often. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water.<br>IN TREATED EFFLUENT: Organism can survive but it is doubtful.<br>IN COOLING DEVICE: Organism can survive but it is doubtful.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical and biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | The organism will survive in aerosol drift but presents no real cause for public concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **ASPERGILLUS RESTRICTUS**<br>DISEASE OR EFFECT: Aspergillosis - aspergilloma fungus ball, - disseminated, - of nasal sinuses.<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is possible for this organism to be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Only susceptible host will contract this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found universally.<br>OCCURRENCE: The disease occurs often. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water.<br>IN TREATED EFFLUENT: Organism can survive but it is doubtful.<br>IN COOLING DEVICE: Organism can survive but it is doubtful.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical and biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | The organism will survive in aerosol drift but presents no real cause for public concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **ASPERGILLUS TERREUS** |
| | DISEASE OR EFFECT: Aspergillosis - aspergilloma fungus ball, - disseminated, - of nasal sinuses.<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is possible for this organism to be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Only susceptible host will contract this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found universally.<br>OCCURRENCE: The disease occurs often. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water.<br>IN TREATED EFFLUENT: Organism can survive but it is doubtful.<br>IN COOLING DEVICE: Organism can survive but it is doubtful.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical and biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | The organism will survive in aerosol drift but presents no real cause for public concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **ASPERGILLUS spp.**<br>DISEASE OR EFFECT: Pneumonia - necrotizing and lung abscess<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is probable that this organism will cause disease and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts are susceptible and usually contract disease when exposed to the pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: It may be found universally.<br>OCCURRENCE: The organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive here.<br>IN TREATED EFFLUENT: The organism can survive here.<br>IN COOLING DEVICE: The organism can survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites. |
| SUMMARY | The organism is likely to be found in aerosol drift. It will be a serious concern to the public and cause public health problems, especially for those whose immune systems have been weakened by illness. |

AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **BACILLUS ANTHRACIS** |
| | DISEASE OR EFFECT: a) Anthrax<br>b) Meningitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: a & b) Unlikely that BACILLUS ANTHRACIS will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a) The host is highly susceptible to the organism and will readily contract this disease. b) Hosts are rarely susceptible and will only contract this disease if their immune systems are weakened. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism can be found and survive in water.<br>GEOGRAPHICAL LOCATION: Usually found in agricultural-animal husbandry environments, but may be found universally.<br>OCCURRENCE: a & b) The disease occurrence is rare. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Doubtful that the organism can survive.<br>IN TREATED EFFLUENT: Doubtful that the organism can survive.<br>IN COOLING DEVICE: The organism may survive this environment.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be killed by physical methods of radiation, filtration and autoclaving. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in aerosol drift. |
| SUMMARY | The organism will survive in aerosol drift and is a cause for public concern. (Anthrax), although Meningitis is only a concern for compromised hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **BACILLUS CEREUS** |
| | DISEASE OR EFFECT: Gastroenteritis |
| | EPIDEMIOLOGICAL SIGNIFICANCE: Organism will probably be transmitted and cause disease. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts are susceptible and usually contract disease when exposed to pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive. |
| | GEOGRAPHICAL LOCATION: Organism can be found universally. |
| | OCCURRENCE: Organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water. |
| | IN TREATED EFFLUENT: Organism probably won't survive in this water. |
| | IN COOLING DEVICE: Organism can survive. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift. It is only of concern when the host's immune systems are weakened by sickness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **BACILLUS SUBTILIS**<br>DISEASE OR EFFECT: Conjunctivitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely to cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Only those hosts whose immune systems have been weakened are likely to contract the disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: It may be found universally.<br>OCCURRENCE: It frequently occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: It is doubtful that the organism will survive in this environment.<br>IN COOLING DEVICE: The organism may survive in this environment.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It may be controlled by physical or chemical means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites. |
| SUMMARY | The disease is likely to be found in aerosol drift but is only a concern to hosts whose immune systems have been weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **BACTEROIDES spp.** |
| | DISEASE OR EFFECT: Pneumonia - necrotizing and lung abscess |
| | EPIDEMIOLOGICAL SIGNIFICANCE: It is probable that this organism will cause disease and be transmitted. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts are susceptible and usually contract disease when exposed to the pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here. |
| | GEOGRAPHICAL LOCATION: The organism is found universally. |
| | OCCURRENCE: The organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive here. |
| | IN TREATED EFFLUENT: The organism can survive. |
| | IN COOLING DEVICE: The organism can survive here. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites. |
| SUMMARY | The organism is likely to be found in aerosol drift. It will be a serious concern to the public and cause public health problems, especially for those whose immune systems have been weakened by illness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **BASIDIOBOLUS HAPTOSPORUS** |
| | DISEASE OR EFFECT: a) Mucormycosis<br>b) Phycomycosis<br>c) Zygomycosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: a&b) It is possible that this organism will cause these diseases, and be transmitted.<br>c) This organism will probably cause this disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a,b) Hosts will rarely contract these diseases unless their immune systems are weakened.<br>c) Few hosts contract this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: The organism can survive in treated effluent.<br>IN COOLING DEVICE: a,c) It is doubtful the organism will survive here and then cause these diseases.<br>b) The organism will survive here and cause this disease.<br>CONTROL METHODS IN WATER OR EFFLUENTS: a,c) The organism can be controlled by physical and chemical means.<br>b) The organism can be controlled by physical chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites. |
| SUMMARY | The organism may be found in aerosol drift and would be of serious cause for concern for susceptible hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| | NAME: **BLASTOMYCES DERMATITIDIS** |
| IDENTIFICATION | DISEASE OR EFFECT: Pneumonia - necrotizing and lung abscess<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is probable that this organism will cause disease and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts are susceptible and usually contract disease when exposed to the pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive here.<br>IN TREATED EFFLUENT: The organism can survive here.<br>IN COOLING DEVICE: The organism can survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites. |
| SUMMARY | The organism is likely to be found in aerosol drift. It will be a serious concern to the public and cause public health problems, especially for those whose immune systems have been weakened by illness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **BORDETELLA PARAPERTUSSIS** |
| | DISEASE OR EFFECT: a) Epiglottitis<br>b) Laryngitis<br>c) Laryngotracheo Bronchitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely the organism will be transmitted and cause these diseases.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Few hosts are susceptible and rarely contract the disease upon exposure to the pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: It is doubtful the organism is found and will survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found in human-municipal areas.<br>OCCURRENCE: Organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful the organism can survive.<br>IN TREATED EFFLUENT: Organism cannot survive in this water.<br>IN COOLING DEVICE: It is unlikely the organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism will be found in aerosol drift. It is unlikely the organism will occur so public health problems will only result if the host's immune system has been weakened by sickness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

### IDENTIFICATION

NAME:
BORDETELLA spp.

DISEASE OR EFFECT:

May cause whooping cough.

EPIDEMIOLOGICAL SIGNIFICANCE:

Very likely to cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY:

Most individuals have been immunized. Unimmunized individuals are quite susceptible.

### OCCURRENCE

POLLUTED WATER SOURCE:

It is doubtful that the organism will be found here and survive.

GEOGRAPHICAL LOCATION:

The organism is found in human municipal areas.

OCCURRENCE:

The organism rarely occurs.

### INTEGRITY/SURVIVABILITY

IN SURFACE WATER:

It is doubtful the organism will survive.

IN TREATED EFFLUENT:

The organism cannot survive in this source.

IN COOLING DEVICE:

The organism probably won't survive.

CONTROL METHODS IN WATER OR EFFLUENTS:

The organisms may be controlled by physical, chemical or biological means.

### AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Very likely to become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

The organism will survive in air or aerosol fomites.

### SUMMARY

It is doubtful that the organism will be found in aerosol drift. Public health hazards should not result although it may affect compromised individuals.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **BRUCELLA ABORTUS** |
| | DISEASE OR EFFECT: a) Brucellosis<br>b) Undulating fever<br>EPIDEMIOLOGICAL SIGNIFICANCE: a&b) This organism can be transmitted and will cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Many hosts, especially in the U.S. are susceptible and will contract the disease upon exposure to the organism. |
| OCCURRENCE | POLLUTED WATER SOURCE: This organism can be found and will survive here.<br>GEOGRAPHICAL LOCATION: Organism is found in agricultural-animal husbandry and industrial environments such as the milk industry.<br>OCCURRENCE: This disease rarely occurs in the U.S. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is unlikely the organism will survive here.<br>IN TREATED EFFLUENT: It is doubtful the organism will survive here.<br>IN COOLING DEVICE: It is doubtful the organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism can be found in aerosol drift and is cause for public health concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: BRUCELLA CANIS<br>DISEASE OR EFFECT: Brucellosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: This organism can be transmitted and will cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts especially in the U.S. are susceptible and will contract the disease upon exposure to the organism. |
| OCCURRENCE | POLLUTED WATER SOURCE: This organism can be found and will survive here.<br>GEOGRAPHICAL LOCATION: Organism is found in agricultural - animal husbandry and industrial environments such as the milk industry.<br>OCCURRENCE: This disease rarely occurs in the U.S. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is unlikely the organism will survive here.<br>IN TREATED EFFLUENT: It is doubtful the organism will survive here.<br>IN COOLING DEVICE: It is doubtful the organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air or aerosol formites |
| SUMMARY | It is doubtful the organism can be found in aerosol drift and is cause for public health concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **BRUCELLA MELITENSIS** |
| | DISEASE OR EFFECT: a) Brucellosis<br>b) Undulating fever |
| | EPIDEMIOLOGICAL SIGNIFICANCE: a&b) This organism can be transmitted and will cause disease. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Many hosts, especially in the U.S. are susceptible and will contract the disease upon exposure to the organism. |
| OCCURRENCE | POLLUTED WATER SOURCE: This organism can be found and will survive here. |
| | GEOGRAPHICAL LOCATION: Organism is found in agricultural-animal husbandry and industrial environments such as the milk industry. |
| | OCCURRENCE: This disease rarely occurs in the U.S. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is unlikely the organism will survive here. |
| | IN TREATED EFFLUENT: It is doubtful the organism will survive here. |
| | IN COOLING DEVICE: It is doubtful the organism will survive here. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism can be found in aerosol drift and is cause for public health concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **BRUCELLA SUIS** |
| | DISEASE OR EFFECT: a) Brucellosis<br>b) Undulating fever<br>EPIDEMIOLOGICAL SIGNIFICANCE: a&b) This organism can be transmitted and will cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Many hosts, especially in the U.S. are susceptible and will contract the disease upon exposure to the organism. |
| OCCURRENCE | POLLUTED WATER SOURCE: This organism can be found and will survive here.<br>GEOGRAPHICAL LOCATION: Organism is found in agricultural-animal husbandry and industrial environments such as the milk industry.<br>OCCURRENCE: This disease rarely occurs in the U.S. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is unlikely the organism will survive here.<br>IN TREATED EFFLUENT: It is doubtful the organism will survive here.<br>IN COOLING DEVICE: It is doubtful the organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism can be found in aerosol drift and is cause for public health concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: CANDIDA ALBICANS |
| | DISEASE OR EFFECT: a) Candidiasis<br>b) Otitis externa<br>EPIDEMIOLOGICAL SIGNIFICANCE: a) It is possible the organism will be transmitted to cause this disease<br>b) It's unlikely that the organism will be transmitted to cause this disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible to either except when they are compromised. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism may be found here.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism occurs occasionally. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: It's doubtful the organism will survive in treated effluent.<br>IN COOLING DEVICE: It's doubtful the organism will survive in a cooling device.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical and chemical means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism survives well in the temperature of the air and aerosol fomites. |
| SUMMARY | The organism will be found in aerosol drift, but won't be of concern except to a host whose immune system has been weakened. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

## IDENTIFICATION

NAME: **CANDIDA ALBICANS**

DISEASE OR EFFECT:
a) Enterocolotitis
b) Meningitis
c) Pharyngitis

EPIDEMIOLOGICAL SIGNIFICANCE: a) It is probable that it will cause this disease and be transmitted.
b & c) It is unlikely it will cause these diseases and be transmitted.

HOST SENSITIVITY/SUSCEPTIBILITY: a) Many hosts are susceptible to these diseases caused by CANIDIDA ALBICANS.
b & c) Comprised hosts are susceptible to these diseases.

## OCCURRENCE

POLLUTED WATER SOURCE: The organism is found in this source.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism occurs occasionally.

## INTEGRITY/SURVIVABILITY

IN SURFACE WATER: The organism can survive here.

IN TREATED EFFLUENT: It is doubtful the organism can survive here.

IN COOLING DEVICE: It is doubtful the organism will survive in the cooling device.

CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical, chemical and biological means.

## AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and aerosol fomites.

## SUMMARY

It is doubtful that this will be of public concern, Enterocolotitis is more of a risk than the others. All of these are a risk to weakened hosts.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: CANDIDA spp. |
| | DISEASE OR EFFECT: a) Candidiasis<br>b) Otitis externa<br>EPIDEMIOLOGICAL SIGNIFICANCE: a) It is possible the organism will be transmitted to cause this disease<br>b) It's unlikely that the organism will be transmitted to cause this disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible to either except when they are compromised. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism may be found here.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism occurs occasionally. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: It's doubtful the organism will survive in treated effluent.<br>IN COOLING DEVICE: It's doubtful the organism will survive in a cooling device.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical and chemical means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism survives well in the temperature of the air and aerosol fomites. |
| SUMMARY | The organism will be found in aerosol drift, but won't be of concern except to a host whose immune system has been weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **CLADOSPORIUM** spp.<br>DISEASE OR EFFECT: Chromomycosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely the organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: The disease is rarely contracted by hosts. |
| OCCURRENCE | POLLUTED WATER SOURCE: It is doubtful the organism would survive.<br>GEOGRAPHICAL LOCATION: The organism is found in agricultural-animal husbandry environments particularly in woodlands and the soil.<br>OCCURRENCE: The disease occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful the organism will survive in this water.<br>IN TREATED EFFLUENT: It is doubtful the organism will survive in this water.<br>IN COOLING DEVICE: It is doubtful the organism will survive in this water.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It is possible the organism will survive in air or in aerosol fomites. |
| SUMMARY | It is doubtful the organism will survive in aerosol drift and presents little cause for public health concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | **NAME:** CLOSTRIDIUM BOTULINUM<br>**DISEASE OR EFFECT:** Botulism<br>**EPIDEMIOLOGICAL SIGNIFICANCE:** It is possible but unlikely the organism will transmit and cause disease.<br>**HOST SENSITIVITY/SUSCEPTIBILITY:** Many hosts are susceptible and will contract the disease upon exposure to the organism. |
| OCCURRENCE | **POLLUTED WATER SOURCE:** Organism is found and can survive in this water.<br>**GEOGRAPHICAL LOCATION:** Organism is found universally.<br>**OCCURRENCE:** This disease rarely occurs. |
| INTEGRITY/SURVIVABILITY | **IN SURFACE WATER:** It is doubtful the organism can survive in surface water.<br>**IN TREATED EFFLUENT:** It is doubtful the organism can survive in treated effluent.<br>**IN COOLING DEVICE:** It is doubtful the organism can survive in the cooling device.<br>**CONTROL METHODS IN WATER OR EFFLUENTS:** The organism can be controlled by physical means to destroy the spores. |
| AEROSOLIZATION | **PROBABILITY OF PASSAGE INTO AEROSOL STATE:** The organism will aerosolize.<br>**INTEGRITY IN AIR AND/OR AEROSOL FOMITES:** The organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism will be in aerosol drift but would be a public health concern is it survived. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **CLOSTRIDIUM PERFINGENS** |
| | DISEASE OR EFFECT: Gastroenteritis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is probable that this organism will cause disease and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts are susceptible and usually contract the disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: It is found universally.<br>OCCURRENCE: The disease occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It can survive in surface water.<br>IN TREATED EFFLUENT: It is doubtful the organism can survive here.<br>IN COOLING DEVICE: The organism survives in this environment.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It will survive in air and aerosol fomites. |
| SUMMARY | The organism is likely to be found in aerosol drift and is unlikely to be a concern unless the host's immune system has been weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME:<br>CLOSTRIDIUM TETANI |
| | DISEASE OR EFFECT:<br>Tetanus<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>It is possible but unlikely for a host to contract this disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Many hosts are susceptible to this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE:<br>This organism is found in and can survive in this water.<br>GEOGRAPHICAL LOCATION:<br>The organism is found universally.<br>OCCURRENCE:<br>The organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER:<br>It is doubtful that the organism can survive in surface water.<br>IN TREATED EFFLUENT:<br>It is doubtful that the organism can survive in treated effluent.<br>IN COOLING DEVICE:<br>It is doubtful the organism can survive in the cooling device environment .<br>CONTROL METHODS IN WATER OR EFFLUENTS:<br>The organsim can be controlled by physical means to destroy the spores. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>The organism will survive in air or aerosol formites. |
| SUMMARY | It is doubtful the organic will be in aerosol drifts, but is would present public health risks should it survive. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| | NAME:<br>COCCIDIOIDES IMMITIS |
| IDENTIFICATION | DISEASE OR EFFECT: a) Coccidioidomycosis<br>b) Pneumonis - necrotizing |
| | EPIDEMIOLOGICAL SIGNIFICANCE: In the eastern U.S., it is unlikely the organism will be transmitted thereby causing these diseases. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts are susceptible and will contract these diseases upon exposure to the organism. Generally, healthy hosts will not contract these diseases. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism may survive in this water. |
| | GEOGRAPHICAL LOCATION: The organism is usually found in agriculture - animal husbandry environment, but may be found universally. |
| | OCCURRENCE: The disease occasionally occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful the organism can survive in this water. |
| | IN TREATED EFFLUENT: It is doubtful the organism will survive in this water. |
| | IN COOLING DEVICE: It is doubtful the organism can survive in this water. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism will survive in aerosol drift. It is of serious public health concern if introduced in large concentrations to an area, especially to compromised hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| | NAME: CONIDIOBOLUS CORONATUS |
| IDENTIFICATION | DISEASE OR EFFECT: Mucormycosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is possible the organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible unless their immune systems have been weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism can survive in this water<br>GEOGRAPHICAL LOCATION: Organism is found universally.<br>OCCURRENCE: Organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water.<br>IN TREATED EFFLUENT: Organism can survive in treated effluent.<br>IN COOLING DEVICE: It is doubtful the organism will survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical or chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can survive in air or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift but is only of concern if the host's immune system has been weakened. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **CONIDIOBOLUS CORONATUS** |
| | DISEASE OR EFFECT: a) Phycomycosis<br>b) Zygomycosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: a) It is possible that this organism will cause these diseases and be transmitted. b) This organism will probably cause this disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a) Hosts will rarely contract these diseases unless their immune systems are weakened.<br>b) Few hosts contract this disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: The organism can survive in treated effluent.<br>IN COOLING DEVICE: a) The organism will survive here.<br>b) It is doubtful the organism will survive here and then cause this disease.<br>CONTROL METHODS IN WATER OR EFFLUENTS: a) The organism can be controlled by physical chemical and biological means.<br>b) The organism can be controlled by physical, and chemical means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites. |
| SUMMARY | The organism may be found in aerosol drift and would be a serious cause for concern for susceptible hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: CORYNEBACTERIUM spp.

DISEASE OR EFFECT: Conjunctivitis

EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely to cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY: Only those hosts whose immune systems have been weakened are likely to contract the disease.

**OCCURRENCE**

POLLUTED WATER SOURCE: The organism is found here.

GEOGRAPHICAL LOCATION: It may be found universally.

OCCURRENCE: It frequently occurs.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: It is doubtful that the organism will survive in this environment.

IN COOLING DEVICE: The organism may survive in this environment.

CONTROL METHODS IN WATER OR EFFLUENTS: It may be controlled by physical or chemical means.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites.

**SUMMARY**

The disease is likely to be found in aerosol drift but is only a concern to hosts whose immune systems have been weakened.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **CORYNEBACTERIUM DIPHTHERIAE** |
| | DISEASE OR EFFECT: a) Diphtheria<br>b) Epiglotitis<br>c) Pharyngitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: a) It is probable the organism will be transmitted and cause disease. b&c) It is unlikely this organism will cause these diseases.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts are susceptible to any of these diseases. if his immune system has been weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism may be found and survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found universally, and particularly in human - municipal areas.<br>OCCURRENCE: Organism rarely occurs in the U.S. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful the organism can survive.<br>IN TREATED EFFLUENT: It is doubtful the organism can survive.<br>IN COOLING DEVICE: It is doubtful the organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism will be found in aerosol drift but is of serious public health concern if it occurs. |

AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: CORYNEBACTERIUM ULCERANS |
| | DISEASE OR EFFECT: a)Diphtheria<br>b) Pharyngitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: a)It is probable the organism will be transmitted and cause disease.<br>b) It is unlikely this organism will cause this disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts will contract either disease. if his immune system has been weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism may be found and survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found universally, especially in human - municipal areas.<br>OCCURRENCE: Organism rarely occurs in the U.S. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful the organism can survive.<br>IN TREATED EFFLUENT: It is doubtful the organism can survive.<br>IN COOLING DEVICE: It is doubtful the organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism will be found in aerosol drift but is of serious public health concern if it occurs. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| | NAME: **CRYPTOCOCCUS NEOFORMANS** |
| IDENTIFICATION | DISEASE OR EFFECT: a) Cryptococcosis<br>b) Meningitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely the organism will be transmitted and cause either disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY:a & b) Host will contract disease if his immune system has been weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE:Organism is found and can survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found universally.<br>OCCURRENCE: Organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water.<br>IN TREATED EFFLUENT: It is doubtful the organism can survive.<br>IN COOLING DEVICE: It is doubtful the organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism can be found in aerosol drifts. It is of public health concern if the host's immune system has been weakened by sickness making him susceptible. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **DERMATOPHILUS CONGOLENSIS** |
| | DISEASE OR EFFECT: Streptotrichosis |
| | EPIDEMIOLOGICAL SIGNIFICANCE: It is possible that the organism will cause disease and be transmitted. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: Few hosts contract the disease and only if their immune system has been weakened by illness. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism can survive in this environment. |
| | GEOGRAPHICAL LOCATION: The organism is found universally. |
| | OCCURRENCE: The organism occasionally occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water. |
| | IN TREATED EFFLUENT: It is doubtful the organism can survive in this environment. |
| | IN COOLING DEVICE: It is doubtful the organism can survive in this environment. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: The organism may be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism can become aerosolized. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It will survive in air and/or aerosol fomites. |
| SUMMARY | The organism is unlikely to be found in aerosol drift and not really cause for public concern except in the case of susceptible hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **ENTEROBACTERIACEAE** |
| | DISEASE OR EFFECT: a) Intraoccular infections<br>b) Meningitis<br>c) Pneumonia<br>EPIDEMIOLOGICAL SIGNIFICANCE: a & b) It is unlikely that this organism will cause these diseases.<br>c) It is probable the organism will cause this diesease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Rarely are hosts susceptible and only when their immune systems are weak. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism is found here.<br>IN TREATED EFFLUENT: The organism is unlikely to be found here.<br>IN COOLING DEVICE: It is doubtful the organism will be found here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organsim can be controlled by physical , chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and aerosol fomites. |
| SUMMARY | Intraocular infections and meningitis are less likely to be cause for concern than pneumonia, and then only for weakened hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME:<br>ESCHERICHIA COLI |
| | DISEASE OR EFFECT: a) Entercolitis<br>b) Gastroenteritis<br>EPIDEMIOLOGICAL SIGNIFICANCE: a&b) Organism will probably be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Some hosts are susceptible and usually contract disease when exposed to pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive.<br>GEOGRAPHICAL LOCATION: Organism can be found universally.<br>OCCURRENCE: Organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water.<br>IN TREATED EFFLUENT: Organism probably won't survive in this water.<br>IN COOLING DEVICE: Organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biologocal means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift. It is only of concern when the host's immune systems are weakened by sickness. |

AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **FUSCOBACTERIUM spp.**<br>DISEASE OR EFFECT: **Pneumonia - necrotizing and lung abscess**<br>EPIDEMIOLOGICAL SIGNIFICANCE: **It is probable that this organism will cause disease and be transmitted.**<br>HOST SENSITIVITY/SUSCEPTIBILITY: **Many hosts are susceptible and usually contract disease when exposed to the pathogen.** |
| OCCURRENCE | POLLUTED WATER SOURCE: **The organism is found here.**<br>GEOGRAPHICAL LOCATION: **The organism is found universally.**<br>OCCURRENCE: **The organism occurs frequently.** |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: **The organism can survive here.**<br>IN TREATED EFFLUENT: **The organism can survive here.**<br>IN COOLING DEVICE: **The organism can survive here.**<br>CONTROL METHODS IN WATER OR EFFLUENTS: **It can be controlled by physical, chemical and biological means.** |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: **The organism will aerosclize.**<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: **The organism will survive in air and/or aerosol fomites.** |
| SUMMARY | **The organism is likely to be found in aerosol drift. It will be a serious concern to the public and cause public health problems, especially for those whose immune systems have been weakened by illness.** |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: GEOTRICIUM CANDIDIUM<br>DISEASE OR EFFECT: Geotrichosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely the organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible and will contract the disease only if their immune systems have been weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Unlikely organism will survive.<br>GEOGRAPHICAL LOCATION: Organism can be found in human-municipal and agricultural-animal husbandry areas.<br>OCCURRENCE: Organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful organism can survive.<br>IN TREATED EFFLUENT: Organism cannot survive in this water.<br>IN COOLING DEVICE: It is unlikely the organism can survive in this water.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism will be found in aerosol drift, and would be of public concern if the host's immune system was weakened. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **HAEMOPHILUS AEGYPTIUS**<br>DISEASE OR EFFECT: Conjunctivitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely to cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Only those hosts whose immune system have been weakened are likely to contract the disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: It may be found universally.<br>OCCURRENCE: It frequently occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: It is doubtful that the organism will survive in this environment.<br>IN COOLING DEVICE: The organism may survive in this environment.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It may be controlled by physical or chemical means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites. |
| SUMMARY | The disease is likely to be found in aerosol drift but is only a concern to hosts whose immune systems have been weakened. |

AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **HAEMOPHILUS INFLUENZAE** |
| | DISEASE OR EFFECT: Pharyngitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely that this organism will cause disease and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Few hosts are susceptible and usually when their immune system has been weakened by illness. |
| OCCURRENCE | POLLUTED WATER SOURCE: It is doubtful that the organism will be found here.<br>GEOGRAPHICAL LOCATION: It is found in human-municipal areas.<br>OCCURRENCE: The organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful the organism can survive in surface water.<br>IN TREATED EFFLUENT: The organism will not survive here.<br>IN COOLING DEVICE: It is doubtful that the organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites. |
| SUMMARY | The organism is unlikely to be found in aerosol drift and is unlikely to be cause for public concern unless a host's immune system is weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| | NAME: **HISTOPLASMA CAPSULATUM** |
| IDENTIFICATION | DISEASE OR EFFECT: a) Histoplasmosis<br>b) Pneumonia - necrotizing and lung abscess<br>EPIDEMIOLOGICAL SIGNIFICANCE: a&b) Organism will probably be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Many hosts are susceptible and will contract the disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism may survive in this source.<br>GEOGRAPHICAL LOCATION: Organism is usually found in agricultural-animal husbandry areas.<br>OCCURRENCE: Organism occurs frequently in the Eastern U.S., otherwise rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism may survive here.<br>IN TREATED EFFLUENT: Organism may survive here.<br>IN COOLING DEVICE: Organism may survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical or chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | Organism will survive in aerosol drift and is a serious concern to public health. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

### IDENTIFICATION

NAME: **KLEBSIELLA PNEUMONIA AND OTHER ENTEROBACTERIACEAE**

DISEASE OR EFFECT:
- a) Pneumonia
- b) Pneumonia - necrotizing and lung abscess

EPIDEMIOLOGICAL SIGNIFICANCE: a&b) The organism will probably cause these diseases and be transmitted.

HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Many hosts are susceptible to these and especially when their immune systems are weakened by illness.

### OCCURRENCE

POLLUTED WATER SOURCE: The organism is found and can survive here.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism occurs frequently.

### INTEGRITY/SURVIVABILITY

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: It may survive in treated effluent.

IN COOLING DEVICE: It may survive here.

CONTROL METHODS IN WATER OR EFFLUENTS:

### AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites.

### SUMMARY

The organism will probably be found in aerosol drift. It can be serious cause for public concern especially for compromised hosts.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **LISTERIA MONOCYTOGENES** |
| | DISEASE OR EFFECT: Meningitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible and will contract the disease if their immune systems are weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism can survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found universally.<br>OCCURRENCE: Organism occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water.<br>IN TREATED EFFLUENT: Unlikely organism will survive here.<br>IN COOLING DEVICE: Unlikely organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can survive in air or aerosol fomites |
| SUMMARY | The organism is unlikely to occur in aerosol drift and would only be of concern if a host's immune system is weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: **MUCOR PUSILLUS**

DISEASE OR EFFECT:
a) Mucormycosis
b) Phycomycosis
c) Zygomycosis

EPIDEMIOLOGICAL SIGNIFICANCE: a&b) It is possible that this organism will cause these diseases, and be transmitted.
c) This organism will probably cause this disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a,b) Hosts will rarely contract these diseases unless their immune systems are weakened.
c) Few hosts contract this disease.

**OCCURRENCE**

POLLUTED WATER SOURCE: The organism is found here.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism occurs rarely.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: The organism can survive in treated effluent.

IN COOLING DEVICE: a,c) It is doubtful the organism will survive here and then cause these diseases.
b) The organism will survive here and cause this disease.

CONTROL METHODS IN WATER OR EFFLUENTS: a,c) The organism can be controlled by physical and chemical means.
b) The organism can be controlled by physical chemical and biological means.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites.

**SUMMARY**

The organism may be found in aerosol drift and would be of serious cause for concern for susceptible hosts.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: MUCOR RAMOSISSIMUS

DISEASE OR EFFECT:
a) Mucormycosis
b) Phycomycosis
c) Zygomycosis

EPIDEMIOLOGICAL SIGNIFICANCE: a,b) It is possible that this organism will cause these diseases, and be transmitted.
c) This organism will probably cause this disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a,b) Hosts will rarely contract these diseases unless their immune systems are weakened.
c) Few hosts contract this disease.

**OCCURRENCE**

POLLUTED WATER SOURCE: The organism is found here.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism occurs rarely.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: The organism can survive in treated effluent.

IN COOLING DEVICE: a,c) It is doubtful the organism will survive here and then cause these diseases.
b) The organism will survive here and cause this disease.

CONTROL METHODS IN WATER OR EFFLUENTS: a,c) The organism can be controlled by physical and chemical means.
b) The organism can be controlled by physical chemical and biological means.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites.

**SUMMARY**

The organism may be found in aerosol drift and would be of serious cause for concern for susceptible hosts.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **MUCOR spp.**<br>DISEASE OR EFFECT: Otitis externa<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely the organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible and will contract the disease if his immune system is weakened by illness. |
| OCCURRENCE | POLLUTED WATER SOURCE: It is unlikely the organism will survive here.<br>GEOGRAPHICAL LOCATION: Organism can be found universally.<br>OCCURRENCE: Organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water.<br>IN TREATED EFFLUENT: It is doubtful the organism can survive.<br>IN COOLING DEVICE: It is doubtful the organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical or chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can survive in air and/or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift but it is only of concern if the host's immune system is weakened by sickness. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **MYCOBACTERIUM spp.** |
| | DISEASE OR EFFECT: Mycobacteriosis |
| | EPIDEMIOLOGICAL SIGNIFICANCE: It is probable the organism will be transmitted and cause this disease. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: Few hosts are susceptible and will contract the disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism can survive in this water. |
| | GEOGRAPHICAL LOCATION: Organism is found universally. |
| | OCCURRENCE: Organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water. |
| | IN TREATED EFFLUENT: It is doubtful the organism can survive. |
| | IN COOLING DEVICE: It is doubtful the organism can survive. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can survive in air or aerosol fomites. |
| SUMMARY | It is unlikely the organism will be found in aerosol drift. It it occurs, it is serious and could cause public health problems if the host's immune system is weakened. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

## IDENTIFICATION

NAME:
MYCOBACTERIUM TUBERCULOSIS

DISEASE OR EFFECT: a) Pneumonia
b) Tuberculosis

EPIDEMIOLOGICAL SIGNIFICANCE: a) It will probably cause Pneumonia and be transmitted. b) It is possible that this organism will cause Tuberculosis

HOST SENSITIVITY/SUSCEPTIBILITY: a) Rarely do hosts contract pneumonia and usually when their immune systems are weak.

b) Some hosts contract tuberculosis.

## OCCURRENCE

POLLUTED WATER SOURCE: The organism is found in polluted water.

GEOGRAPHICAL LOCATION: The organism may be found universally.

OCCURRENCE: The organism rarely occurs.

## INTEGRITY/SURVIVABILITY

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: The organism can survive in treated effluent.

IN COOLING DEVICE: It is doubtful the organism will survive in the cooling device.

CONTROL METHODS IN WATER OR EFFLUENTS: The organism may be controlled by physical, chemical and biological means.

## AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism can become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites.

## SUMMARY

The organism may be found in aerosol drift. Tuberculosis poses a threat to the public at large but Pneumonia is an unlikely risk except to weakened hosts.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: **NOCARDIA ASTEROIDES**

DISEASE OR EFFECT:
a) Nocardiosis
b) Pneumonia - necrotizing
c) Pneumonia - plague

EPIDEMIOLOGICAL SIGNIFICANCE: a,b,c) It is probable that the organism will be transmitted and cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a) Few hosts will be susceptible and contract the disease.
b&c) Rarely will hosts be susceptible and will contract the disease only if their immune systems have been weakened.

**OCCURRENCE**

POLLUTED WATER SOURCE: Organism will be found in this water.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism rarely occurs.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: It is doubtful the organism will survive here.

IN COOLING DEVICE: It is doubtful that the organism will survive here.

CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical and chemical means.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE: It will probably aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It will survive in air and aerosol fomites.

**SUMMARY**

It is unlikely for Nocardiosis to be transmitted in aerosol drift. Pneumonia-necrotizing and - plague are likely to be found in the drift. While all 3 could be cause for public concern, it is unlikely unless the host's immune systems have been weakened.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **NOCARDIA BRASILIENSIS** |
| | DISEASE OR EFFECT: a) Nocardiosis<br>b) Pneumonia - necrotizing<br>c) Pneumonia - plague<br>EPIDEMIOLOGICAL SIGNIFICANCE: a,b,c) It is probable that the organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a) Few hosts will be susceptible and contract the disease.<br>b&c) Rarely will hosts be susceptible, and will contract the disease only if their immune systems have been weakened. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism will be found in this water.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: It is doubtful that the organism will survive here.<br>IN COOLING DEVICE: It is doubtful that the organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical and chemical means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: It will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It will survive in air and aerosol fomites. |
| SUMMARY | It is unlikely for Nocardiosis to be transmitted in aerosol drift. Pneumonia-necrotizing and - plague are likely to be found in the drift. While all 3 could be cause for public concern, it is unlikely unless the host's immune systems have been weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: **NOCARDIA CAVIAE**

DISEASE OR EFFECT:
a) Nocardiosis
b) Pneumonia - necrotizing
c) Pneumonia - plague

EPIDEMIOLOGICAL SIGNIFICANCE: a,b,c) It is probable that the organism will be transmitted and cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a) Few hosts will be susceptible and contract the disease.
b&c) Rarely will hosts be susceptible and will contract the disease only if their immune systems have been weakened.

**OCCURRENCE**

POLLUTED WATER SOURCE: Organism will be found in this water.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism rarely occurs.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: It is doubtful that the organism will survive here.

IN COOLING DEVICE: It is doubtful that the organism will survive here.

CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical and chemical means.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE: It will probably aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It will survive in air and aerosol fomites.

**SUMMARY**

It is unlikely for Nocardiosis to be transmitted in aerosol drift. Pneumonia-necrotizing and - plague are likely to be found in the drift. While all 3 could be cause for public concern, it is unlikely unless the hosts's immune systems have been weakened.

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **PEPTOCOCCUS spp.** |
| | DISEASE OR EFFECT: Pneumonia - necrotizing and lung abcess<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is probable that this organism will cause disease and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts are susceptible and usually contract disease when exposed to the pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: It may be found universally.<br>OCCURRENCE: The organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive here.<br>IN TREATED EFFLUENT: The organism can survive here.<br>IN COOLING DEVICE: The organism can survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites. |
| SUMMARY | The organism is likely to be found in aerosol drift. It will be a serious concern to the public and cause public health problems, especially for those whose immune systems have been weakened by illness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **PEPTOSTREPTOCOCCUS spp.**<br>DISEASE OR EFFECT: Pneumonia - necrotizing and lung abscess<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is probable that this organism will cause disease and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts are susceptible and usually contract disease when exposed to the pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: It may be found universally.<br>OCCURRENCE: The organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive here.<br>IN TREATED EFFLUENT: The organism can survive here.<br>IN COOLING DEVICE: The organism can survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites. |
| SUMMARY | The organism is likely to be found in aerosol drift. It will be a serious concern to the public and cause public health problems, especially for those whose immune systems have been weakened by illness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | | |
|---|---|---|
| IDENTIFICATION | NAME: | **PHIALOPHORA** spp. |
| | DISEASE OR EFFECT: | Chromomycosis |
| | EPIDEMIOLOGICAL SIGNIFICANCE: | It is unlikely the organism will be transmitted and cause disease. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: | The disease is rarely contracted by hosts. |
| OCCURRENCE | POLLUTED WATER SOURCE: | The organism would survive. |
| | GEOGRAPHICAL LOCATION: | The organism is found in agricultural - animal husbandry environments particularly in woodlands and the soil. |
| | OCCURRENCE: | The disease occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: | It is doubtful the organism will survive in this water. |
| | IN TREATED EFFLUENT: | It is doubtful the organism will survive in this water. |
| | IN COOLING DEVICE: | It is doubtful the organism will survive in this water. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: | The organism can be controlled by physical and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: | The organism will aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: | It is possible the organism will survive in air or in aerosol fomites. |
| SUMMARY | | It is doubtful the organism will survive in aerosol drift and presents little cause for public health concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **PROTEUS MIRABILIS** |
| | DISEASE OR EFFECT: Enterocolotitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: Organism will probably be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts are susceptible and usually contract disease when exposed to pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive.<br>GEOGRAPHICAL LOCATION: Organism can be found universally.<br>OCCURRENCE: Organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water.<br>IN TREATED EFFLUENT: Organism probably won't survive in this water.<br>IN COOLING DEVICE: Organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift. It is only of concern when the host's immune systems are weakened by sickness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **PROTOTHECA** spp. |
| | DISEASE OR EFFECT: Protothecosis |
| | EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely the organism will be transmitted and cause disease. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible and will contract the disease if their immune systems have been weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Unknown |
| | GEOGRAPHICAL LOCATION: Organism occurs universally. |
| | OCCURRENCE: Organism occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water. |
| | IN TREATED EFFLUENT: It is unlikely the organism can survive in this water. |
| | IN COOLING DEVICE: It is unlikely the organism can survie in this water. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will not aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will not survive in air or aerosol fomites due to dessication and/or radiation. |
| SUMMARY | It is doubtful the organism will be in aerosol drift, therefore, it is unlikely to cause public health problems. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: **PSEUDOMONAS AERUGINOSA**

DISEASE OR EFFECT:
a) Conjunctivitis
b) Intra occular infections
c) Otitis Externa

EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely for the organism to cause any of these diseases.

HOST SENSITIVITY/SUSCEPTIBILITY: It is rare for hosts to be susceptible and will only contract these diseases when their immune systems have been weakened by illness.

**OCCURRENCE**

POLLUTED WATER SOURCE: It is doubtful the organism can survive in this environment.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism rarely occurs.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: It is probable the organism will survive.

IN TREATED EFFLUENT: It is doubtful the organism will survive in treated effluent.

IN COOLING DEVICE: It is doubtful it can survive.

CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air or aerosol fomites.

**SUMMARY**

The organism may be found in aerosol drift, but will only be of concern to a host whose immune systems are weakened.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: **PSEUDOMONAS AERUGINOSA**

DISEASE OR EFFECT:
- a) Enterocolotitis
- b) Meningitis
- c) Pneumonia - necrotizing and lung abscess

EPIDEMIOLOGICAL SIGNIFICANCE: a&c) Organism will probably be transmitted and cause disease.
b) Organism probably won't cause this disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a&c) Many hosts are susceptible and usually contract disease when exposed to pathogen.
b) Rarely do hosts contract this disease and usually when their immune systems have been weakened.

**OCCURRENCE**

POLLUTED WATER SOURCE: Organism is found and can survive.

GEOGRAPHICAL LOCATION: Organism can be found universally.

OCCURRENCE: Organism occurs frequently.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: Organism can survive in this water.

IN TREATED EFFLUENT: Organism probably won't survive in this water.

IN COOLING DEVICE: Organism probably won't survive.

CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites.

**SUMMARY**

Organism can be found in aerosol drift. It is only of concern when the host's immune systems are weakened by sickness.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **PSEUDOMONAS MALLEI** |
| | DISEASE OR EFFECT: Glanders (horses)<br>EPIDEMIOLOGICAL SIGNIFICANCE: The organism will probably be transmitted, and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts are susceptible upon exposure if their immune systems have been weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found in agricultural-animal husbandry areas.<br>OCCURRENCE: Organism occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful the organism will survive here.<br>IN TREATED EFFLUENT: It is doubtful the organism will survive here.<br>IN COOLING DEVICE: It is doubtful the organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical or chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can be found and survive in air and/or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift. It is a serious cause for conern and can cause public health problems. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME:<br>**PSEUDOMONAS PSEUDOMALLEI** |
| | DISEASE OR EFFECT: a) Meliodosis<br>b) Pneumonia<br>c) Pneumonia-necrotizing and lung abscess<br>EPIDEMIOLOGICAL SIGNIFICANCE: a b &c) The organism will probably cause dieases and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a b &c) Many hosts are susceptible and expecially so when their immune systems are weakened by illness. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found and can survive here.<br>GEOGRAPHICAL LOCATION: The organism is usually found in human - municipal areas once introduced.<br>OCCURRENCE: The organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: It may survive in treated effluent.<br>IN COOLING DEVICE: It may survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It may be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites. |
| SUMMARY | The organism will probably be found in aerosol drift. It can be a serious cause for public concern if it occurs, especially for compromised hosts. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **RHINOCLADIELLA** spp. |
| | DISEASE OR EFFECT: Chromomycosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely the organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: The disease is rarely contracted by hosts. |
| OCCURRENCE | POLLUTED WATER SOURCE: It is doubtful the organism would survive.<br>GEOGRAPHICAL LOCATION: The organism is found in agricultural - animal husbandry environments particularly in woodlands and the soil.<br>OCCURRENCE: The disease occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful the organism will survive in this water.<br>IN TREATED EFFLUENT: It is doubtful the organism will survive in this water.<br>IN COOLING DEVICE: It is doubtful the organism will survive in this water.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical and chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It is possible the organism will survive in air or in aerosol fomites. |
| SUMMARY | It is doubtful the organism will survive in aerosol drift and presents little cause for public health concern. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

### IDENTIFICATION

NAME: RHIZOPUS ARRHIZUS

DISEASE OR EFFECT:
a) Mucormycosis
b) Phycomycosis
c) Zygomycosis

EPIDEMIOLOGICAL SIGNIFICANCE: a,b) It is possible that this organism will cause these diseases, and be transmitted.
c) This organism will probably cause this disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a,b) Hosts will rarely contract these diseases unless their immune systems are weakened.
c) Few hosts contract this disease.

### OCCURRENCE

POLLUTED WATER SOURCE: The organism is found here.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism occurs rarely.

### INTEGRITY/SURVIVABILITY

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: The organism can survive in treated effluent.

IN COOLING DEVICE: a,c) It is doubtful the organism will survive here and then cause these diseases.
b) The organism will survive here and cause this disease.

CONTROL METHODS IN WATER OR EFFLUENTS: a,c) The organism can be controlled by physical and chemical means.
b) The organism can be controlled by physical chemical and biological means.

### AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites.

### SUMMARY

The organism may be found in aerosol drift and would be of serious cause for concern for susceptible hosts.

PATHOGEN

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: RHIZOPUS ORYZAE

DISEASE OR EFFECT:
a) Mucormycosis
b) Phycomycosis
c) Zygomycosis

EPIDEMIOLOGICAL SIGNIFICANCE: a,b) It is possible that this organism will cause these diseases, and be transmitted.
c) This organism will probably cause this disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a,b) Hosts will rarely contract these diseases unless their immune systems are weakened.
c) Few hosts contract this disease.

**OCCURRENCE**

POLLUTED WATER SOURCE: The organism is found here.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism occurs rarely.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: The organism can survive in treated effluent.

IN COOLING DEVICE: a,c) It is doubtful the organism will survive here and then cause these diseases.
b) The organism will survive here and cause this disease.

CONTROL METHODS IN WATER OR EFFLUENTS: a,c) The organism can be controlled by physical and chemical means.
b) The organism can be controlled by physical chemical and biological means.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites.

**SUMMARY**

The organism may be found in aerosol drift and would be of serious cause for concern for susceptible hosts.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME:<br>**SALMONELLA spp.** |
| | DISEASE OR EFFECT: a) Enterocolotitis<br>b) Salmonellosis |
| | EPIDEMIOLOGICAL SIGNIFICANCE: a & b) Organism will probably be transmitted and cause these diseases. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: a & b) Some hosts are susceptible and usually contract these diseases when exposed to pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive. |
| | GEOGRAPHICAL LOCATION: Organism can be found universally. |
| | OCCURRENCE: Organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water. |
| | IN TREATED EFFLUENT: Organism probably won't survive in this water. |
| | IN COOLING DEVICE: Organism can survive. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift. It is only of concern when the host's immune systems are weakened by sickness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | **NAME: SALMONELLA TYPHI**<br>DISEASE OR EFFECT: Typhoid fever<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is probable that it will cause disease and be transmitted for all hosts that are exposed to it.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts are susceptible and will contract the disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism will be found in this source.<br>GEOGRAPHICAL LOCATION: The organism is found universally.<br>OCCURRENCE: The organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: The organism is unlikely to survive in this environment.<br>IN COOLING DEVICE: The organism can survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism can become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites. |
| SUMMARY | It is likely that this organism will be found in aerosol drift and it is likely to be of public concern only to hosts whose immune systems have been weakened |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: SHIGELLA spp.<br>DISEASE OR EFFECT: Enterocolotitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: Organism will probably be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts are susceptible and usually contract disease when exposed to pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive.<br>GEOGRAPHICAL LOCATION: Organism can be found universally.<br>OCCURRENCE: Organism frequently occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water.<br>IN TREATED EFFLUENT: Organism probably won't survive in this water.<br>IN COOLING DEVICE: Organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift. It is only of concern when the host's immune systems are weakened by sickness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

### IDENTIFICATION

NAME: **SHIGELLA BOYDII**

DISEASE OR EFFECT:
a) Bacillary Dysentary
b) Shigellosis

EPIDEMIOLOGICAL SIGNIFICANCE: a&b) This organism is transmittable and will cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Many hosts are susceptible and will contract these diseases when exposed to organism.

### OCCURRENCE

POLLUTED WATER SOURCE: This organism can be found and will survive in this water.

GEOGRAPHICAL LOCATION: Organism is found usually in human-municipal and agricultural-animal husbandry environments but may be found universally.

OCCURRENCE:
a) This disease rarely occurs.
b) This disease frequently occurs.

### INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Organism may survive in this water.

IN TREATED EFFLUENT: It is doubtful the organism can survive.

IN COOLING DEVICE: The organism may survive in this environment.

CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical, chemical and biological methods.

### AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: It is likely the organism will aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It is possible the organism will survive in air or aerosol fomites.

### SUMMARY

It is doubtful the organism will survive in aerosol drift but would be a serious public health concern if it did.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **SHIGELLA DYSENTERIAE** |
| | DISEASE OR EFFECT: a) Bacillary Dysentary<br>b) Shigellosis |
| | EPIDEMIOLOGICAL SIGNIFICANCE: a) and b) - This organism is transmittable and will cause disease. |
| | HOST SENSITIVITY/SUSCEPTIBILITY: a) and b) - Many hosts are susceptible and will contract these diseases when exposed to organism. |
| OCCURRENCE | POLLUTED WATER SOURCE: This organism can be found and will survive in this water. |
| | GEOGRAPHICAL LOCATION: Organism is usually found in human-municipal and agricultural - animal husbandry environments but may be found universally. |
| | OCCURRENCE: a) This disease rarely occurs.<br>b) This disease frequently occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism may survive in this water |
| | IN TREATED EFFLUENT: It is doubtful the organism can survive |
| | IN COOLING DEVICE: The organism may survive in this environment. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical, chemical and biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: It is likely the organism will aerosolize. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It is possible the organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism will survive in aerosol drift but would be a serious public health concern if it did. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **SHIGELLA FLEXNERI** |
| | DISEASE OR EFFECT: a) Bacillary Dysentary<br>b) Shigellosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: a&b) This organism is transmittable and will cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Many hosts are susceptible and will contract these diseases when exposed to organism. |
| OCCURRENCE | POLLUTED WATER SOURCE: This organism can be found and will survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found usually in human-municipal and agricultural-animal husbandry environments but may be found universally.<br>OCCURRENCE: a) This disease rarely occurs.<br>b) This disease frequently occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism may survive in this water.<br>IN TREATED EFFLUENT: It is doubtful the organism can survive.<br>IN COOLING DEVICE: The organism may survive in this environment.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical, chemical and biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: It is likely the organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It is possible the organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism will survive in aerosol drift but would be a serious public health concern if it did. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **SHIGELLA SONNEI** |
| | DISEASE OR EFFECT: a) Bacillary Dysentary<br>b) Shigellosis<br>EPIDEMIOLOGICAL SIGNIFICANCE: a & b) This organism is transmittable and will cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: a & b) Many hosts are susceptible and will contract disease when exposed to organism. |
| OCCURRENCE | POLLUTED WATER SOURCE: This organism can be found and will survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is usually found in human-municipal and agricultural animal husbandry environments but may be found universally.<br>OCCURRENCE: a) This disease rarely occurs.<br>b) This disease frequently occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism may survive in this water.<br>IN TREATED EFFLUENT: It is doubtful the organism can survive.<br>IN COOLING DEVICE: The organism may survive in this environment.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical, chemical and biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: It is likely the organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It is possible the organism will survive in air or aerosol fomites. |
| SUMMARY | It is doubtful the organism will survive in aerosol drift but would be a serious public health concern if it did. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

NAME: **SPOROTHRIX SCHENCKII**

### IDENTIFICATION

DISEASE OR EFFECT: Sporotrichosis (streptotrichosis)

EPIDEMIOLOGICAL SIGNIFICANCE: It is possible the organism will be transmitted and cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts are susceptible and will contract the disease if their immune systems are weakened by sickness.

### OCCURRENCE

POLLUTED WATER SOURCE: Organism can be found and survive in this water.

GEOGRAPHICAL LOCATION: Organism is found universally.

OCCURRENCE: Organism occurs occasionally.

### INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Organism can survive in this water.

IN TREATED EFFLUENT: It is doubtful the organism can survive in this water.

IN COOLING DEVICE: It is doubtful the organism can survive in this water.

CONTROL METHODS IN WATER OR EFFLUENTS: It is doubtful the organism can survive.

### AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism can aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can survive in air or aerosol fomites.

### SUMMARY

It is doubtful the organism can be found in aerosol drift. It is unlikely to cause public health problems unless the host's immune system is weakened by sickness.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | NAME: **STAPHYLOCOCCUS AGALACTIAE** |
| | DISEASE OR EFFECT: Meningitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible and will contract the disease if their immune systems are weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism can survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found universally.<br>OCCURRENCE: Organism occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water.<br>IN TREATED EFFLUENT: Unlikely organism will survive here.<br>IN COOLING DEVICE: Unlikely organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can survive in air or aerosol fomites. |
| SUMMARY | The organism is unlikely to occur in aerosol drift and would only be of concern if a host's immune system is weakened. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

## IDENTIFICATION

NAME: **STAPHYLOCOCCUS AUREUS**

DISEASE OR EFFECT:
- a) Enterocolotitis
- b) Gastroenteritis
- c) Pneumonia
- d) Pneumonia-necrotizing and lung abscess

EPIDEMIOLOGICAL SIGNIFICANCE: It is probable that this organism will be transmitted and cause all of these diseases.

HOST SENSITIVITY/SUSCEPTIBILITY: Many hosts are susceptible and will contract these diseases when exposed to the pathogens. Hosts susceptible to the forms of Pneumonia are usually compromised.

## OCCURRENCE

POLLUTED WATER SOURCE: The organism is found here and can survive.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism occurs frequently.

## INTEGRITY/SURVIVABILITY

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: The organism can survive in treated effluent.

IN COOLING DEVICE: The organsim can survive in the cooling device.

CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means.

## AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: It will pass into aerosol state.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It will survive in air and aerosol fomites.

## SUMMARY

The organism will probably be found in aerosol drift. It can be a serious concern to the public and especially to compromised hosts who are weakened by illness.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | NAME: **STREPTOCOCCUS** spp. |
| | DISEASE OR EFFECT: Pharyngitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely that this organism will cause disease and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Few hosts are susceptible and usually when their immune system has been weakened by illness. |
| OCCURRENCE | POLLUTED WATER SOURCE: It is doubtful that the organism will be found here.<br>GEOGRAPHICAL LOCATION: It is found in human-municipal areas.<br>OCCURRENCE: The organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful the organism can survive in surface water.<br>IN TREATED EFFLUENT: The organism will not survive here.<br>IN COOLING DEVICE: It is doubtful that the organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: The organism can be controlled by physical chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites. |
| SUMMARY | The organism is unlikely to be found in aerosol drift and is unlikely to be cause for public concern unless a host's immune system is weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

IDENTIFICATION

NAME: STREPTOCOCCUS FAECALIS

DISEASE OR EFFECT: Enterocolotitis

EPIDEMIOLOGICAL SIGNIFICANCE: Organism will probably be transmitted and cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts are susceptible and usually contract disease when exposed to pathogen.

OCCURRENCE

POLLUTED WATER SOURCE: Organism is found and can survive.

GEOGRAPHICAL LOCATION: Organism can be found universally.

OCCURRENCE: Organism occurs frequently.

INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Organism can survive in this water.

IN TREATED EFFLUENT: Organism probably won't survive in this water.

IN COOLING DEVICE: Organism can survive.

CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means.

AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites.

SUMMARY

Organism can be found in aerosol drift. It is only of concern when the host's immune systems are weakened by sickness.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **STREPTOCOCCUS PNEUMONIAE (DIPLOCOCCUS)**<br>DISEASE OR EFFECT: Conjunctivitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely to cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Only those hosts whose immune systems have been weakened are likely to contract the disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: It may be found universally.<br>OCCURRENCE: It frequently occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: The organism can survive in surface water.<br>IN TREATED EFFLUENT: It is doubtful that the organism will sruvive in this environment.<br>IN COOLING DEVICE: The organism may survive in this environment.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It may be controlled by physical or chemical means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism will survive in air and/or aerosol fomites. |
| SUMMARY | The disease is likely to be found in aerosol drift but is only a concern to hosts whose immune systems have been weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **STREPTOCOCCUS PYOGENES** |
| | DISEASE OR EFFECT: Otitis externa<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely the organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible and will contract the disease if his immune system is weakened by illness. |
| OCCURRENCE | POLLUTED WATER SOURCE: It is unlikely the organism will survive here.<br>GEOGRAPHICAL LOCATION: Organism can be found universally.<br>OCCURRENCE: Organism rarely occurs. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water.<br>IN TREATED EFFLUENT: It is doubtful the organism can survive.<br>IN COOLING DEVICE: It is doubtful the organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical or chemical methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can survive in air and/or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift but it is only of concern if the host's immune system is weakened by sickness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

IDENTIFICATION

NAME: **STREPTOCOCCUS PYOGENES (GROUP A)**

DISEASE OR EFFECT:
a) Pneumonia - necrotizing and lung abscess
b) Pharyngitis

EPIDEMIOLOGICAL SIGNIFICANCE: a) The organism will probably cause disease and be transmitted.

b) It is unlikely the organism will cause this disease.

HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Some hosts are susceptible and especially so when their immune systems are weakened by illness.

OCCURRENCE

POLLUTED WATER SOURCE: It is doubtful the organism will be found here.

GEOGRAPHICAL LOCATION: The organism may be found universally but is usually found in human-municipal areas.

OCCURRENCE: The organism occurs frequently.

INTEGRITY/SURVIVABILITY

IN SURFACE WATER: The organims may survive in surface water.

IN TREATED EFFLUENT: It is doubtful that the organism will survive in treated effluent.

IN COOLING DEVICE: It is doubtful that the organism will survive here.

CONTROL METHODS IN WATER OR EFFLUENTS: The organism may be controlled by physical, chemical and biological means.

AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites.

SUMMARY

The organism may be found in aerosol drift. It would only be a serious cause for concern for compromised hosts whose immune systems are weakened.

AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **TORULOPSIS GLABRATA** |
| | DISEASE OR EFFECT: Meningitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is unlikely organism will be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are rarely susceptible and will contract the disease if their immune systems are weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism can survive in this water.<br>GEOGRAPHICAL LOCATION: Organism is found universally.<br>OCCURRENCE: Organism occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in surface water.<br>IN TREATED EFFLUENT: Unlikely organism will survive here.<br>IN COOLING DEVICE: Unlikely organism will survive here.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can survive in air or aerosol fomites. |
| SUMMARY | The organism is unlikely to occur in aerosol drift and would only be of concern if a host's immune system is weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **VIBRIO PARAHEMOLYTICA** |
| | DISEASE OR EFFECT: Gastroenteritis<br>EPIDEMIOLOGICAL SIGNIFICANCE: It is probable that this organism will cause disease and be transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts are susceptible and usually contract the disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: The organism is found here.<br>GEOGRAPHICAL LOCATION: It is found universally.<br>OCCURRENCE: The disease occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It can survive in surface water.<br>IN TREATED EFFLUENT: It is doubtful the organism can survive here.<br>IN COOLING DEVICE: The organism survives in this environment.<br>CONTROL METHODS IN WATER OR EFFLUENTS: It can be controlled by physical, chemical and biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: It will survive in air and aerosol fomites. |
| SUMMARY | The organism is likely to be found in aerosol drift and is unlikely to be a concern to hosts unless their immune system has been weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **YERSINIA ENTEROCOLITICA** |
| | DISEASE OR EFFECT: Enterocolotitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: Organism will probably be transmitted and cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Some hosts are susceptible and usually contract disease when exposed to pathogen. |
| OCCURRENCE | POLLUTED WATER SOURCE: Organism is found and can survive.<br>GEOGRAPHICAL LOCATION: Organism can be found universally.<br>OCCURRENCE: Organism occurs frequently. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Organism can survive in this water.<br>IN TREATED EFFLUENT: Organism probably won't survive in this water.<br>IN COOLING DEVICE: Organism can survive.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical or biological means. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will probably aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism will survive in air or aerosol fomites. |
| SUMMARY | Organism can be found in aerosol drift. It is only of concern when the host's immune systems are weakened by sickness. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

IDENTIFICATION

NAME: **YERSINA PESTIS (PASTURELLA)**

DISEASE OR EFFECT:
a) Plague
b) Pneumonia

EPIDEMIOLOGICAL SIGNIFICANCE: a&b) The organism will probably cause disease and be transmitted.

HOST SENSITIVITY/SUSCEPTIBILITY: a&b) Many hosts are susceptible and especially so when their immune systems are weakened by illness.

OCCURRENCE

POLLUTED WATER SOURCE: The organism is found and can survive here.

GEOGRAPHICAL LOCATION: The organism is found universally.

OCCURRENCE: The organism occurs frequently.

INTEGRITY/SURVIVABILITY

IN SURFACE WATER: The organism can survive in surface water.

IN TREATED EFFLUENT: It may survive in treated effluent.

IN COOLING DEVICE: It may survive here.

CONTROL METHODS IN WATER OR EFFLUENTS:

AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: The organism will probably become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: The organism can survive in air and aerosol fomites.

SUMMARY

The organism will probably be found in aerosol drift. It can be a serious cause for public concern especially for compromised hosts.

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| | NAME: **YERSINA PSEUDOTUBERCULOSIS** |
| IDENTIFICATION | DISEASE OR EFFECT: **Enterocolotitis**<br>EPIDEMIOLOGICAL SIGNIFICANCE: **Organism will probably be transmitted and cause disease.**<br>HOST SENSITIVITY/SUSCEPTIBILITY: **Some hosts are susceptible and usually contract disease when exposed to pathogen.** |
| OCCURRENCE | POLLUTED WATER SOURCE: **Organism is found and can survive.**<br>GEOGRAPHICAL LOCATION: **Organism can be found universally.**<br>OCCURRENCE: **Organism occurs frequently.** |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: **Organism can survive in this water.**<br>IN TREATED EFFLUENT: **Organism probably won't survive in this water.**<br>IN COOLING DEVICE: **Organism can survive.**<br>CONTROL METHODS IN WATER OR EFFLUENTS: **Organism can be controlled by physical, chemical or biological means.** |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: **Organism will probably aerosolize.**<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: **Organism will survive in air or aerosol fomites.** |
| SUMMARY | **Organism can be found in aerosol drift. It is only of concern when the host's immune systems are weakened by sickness.** |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: ZYGOMYCETES (PHYCOMYCETES) |
|  | DISEASE OR EFFECT: Intraocular infections<br>EPIDEMIOLOGICAL SIGNIFICANCE: Unlikely organism will be transmitted or cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Hosts will rarely contract the disease upon exposure and only if their immune systems are weakened by sickness. |
| OCCURRENCE | POLLUTED WATER SOURCE: Unlikely organism will survive in this water.<br>GEOGRAPHICAL LOCATION: Organism can be found in human - municipal, agriculture - animal husbandry, and industrial areas.<br>OCCURRENCE: Organism occurs rarely. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: It is doubtful organism can survive in this water.<br>IN TREATED EFFLUENT: It is doubtful organism can survive in this water.<br>IN COOLING DEVICE: It is doubtful organism can survive in this water.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Organism can be controlled by physical, chemical & biological methods. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Organism will aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Organism can survive in air or aerosol fomites. |
| SUMMARY | Unlikely organism will be in aerosol drift and would be of public health concern if the host's immune system was weakened. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **ACENAPHTHENE**<br>DISEASE OR EFFECT: Neoplastic Effects<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: Lowest toxic dose on skin of mouse 600 gm/kgs |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (dye intermediate; manufacturing plastics, insecticides fungicides).<br>Agricultural (insecticide, fugicide)<br>GEOGRAPHICAL LOCATION: Industrial - significant in areas of heavy industry.<br>Agricultural - greater probability of occurrence in rural farm areas.<br>OCCURRENCE: Industrial - frequent in these areas.<br>Agricultural - occasionally in these areas. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no change.<br>IN TREATED EFFLUENT: Little or no change.<br>IN COOLING DEVICE: Little or no change.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Extraction |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Not likely to become aerosolized due to insolubility and high boiling point.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Should remain stable |
| SUMMARY | Not likely to become a factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

### IDENTIFICATION

NAME: ACETONE

DISEASE OR EFFECT: Inhalation may produce headache, fatigue, excitement, bronchial irritation and in large amounts narcosis. Serious poisoning rare. Repeated topical use may cause erythema, dryness.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure at 1000 ppm (air) or 2400 $mg/M^3$ (water).

### OCCURRENCE

POLLUTED WATER SOURCE: Industrial (use: solvent, manufacturers of many products). Municipal (in inefficient waste treatment system).

GEOGRAPHICAL LOCATION: Significant in areas of heavy chemical industries. Municipal areas - may be significant in densely populated areas.

OCCURRENCE: Frequently present in Industrial areas. Rarely present in municipal areas.

### INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Miscible with water.

IN TREATED EFFLUENT: No significant chlorine demand; readily reduced by biological degradation, plant operating over optimal capacity increases potential for acetone discharge.

IN COOLING DEVICE: Very volatile; boils at 56°C.

CONTROL METHODS IN WATER OR EFFLUENTS: Biological waste treatment (50% removal); activated carbon (90% removal).

### AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: Total aerosolization anticipated due to high volatility , and low boiling point.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Should remain stable.

### SUMMARY

This may be a significant factor in cooling tower drift.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

IDENTIFICATION

NAME: ACROLEIN

DISEASE OR EFFECT: Skin and mucus irritant. Vapors cause lacrimation. Sensitization and asthma reported

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY: $LD_{50}$ 30 mg/kg subcutaneous in mice.

OCCURRENCE

POLLUTED WATER SOURCE: Industrial (plastics manufacturers, military poison gas mixtures, perfumes).

GEOGRAPHICAL LOCATION: Significant in areas of heavy industry.

OCCURRENCE: Range of concentration in surface water 0.1 mg/l-10 mg/l. Worst case concentration is $>$10 mg/l

INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Unstable, forms disacryl.

IN TREATED EFFLUENT: Little or no effect

IN COOLING DEVICE: Boils at 52°C.

CONTROL METHODS IN WATER OR EFFLUENTS: Absorption, adsorption, extraction.

AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE: probability due to high volatility very high.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Very unstable; polymerizes especially under light.

SUMMARY

Likely to be a significant factor in cooling tower drift.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **ACRYLONITRILE** |
| | DISEASE OR EFFECT: Very toxic through cyanide effect. |
| | EPIDEMIOLOGICAL SIGNIFICANCE: |
| | HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure at 20 ppm (in air) or 45 mg/$_M{}^3$ |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (Manufacturers of acrylic fibers; in plastics, surface coatings, adhesives; synthesis of 'antitoxicents, pharmaceutical as pesticide fumigant for stored grain). Agricultural (pesticide fumigant for stored grain). |
| | GEOGRAPHICAL LOCATION: Industrial - significant in areas of heavy industry.<br>Agricultural - great probability of occurrence. |
| | OCCURRENCE: Chemical concentration in surface water 18.0 mg/l |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; soluble in water, but difficult to degrade. |
| | IN TREATED EFFLUENT: Little or no effect. |
| | IN COOLING DEVICE: Volatile at cooling device temperatures (Boils at 77.5°C). |
| | CONTROL METHODS IN WATER OR EFFLUENTS: Absorption, adsorption by natural or synthetic resins, extraction. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Volatile liquid at cooling device temperature;<br>High probability of aerosolizing. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>May polymerize spontaneously in presence of light. Develops yellow color after excessive exposure. |
| SUMMARY | A significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | **NAME: ALDRIN** |
| | DISEASE OR EFFECT: Poisoning may occur by ingestion, inhalation, skin absorption. Acute exposure may cause renal damage, tremors, ataxia, convulsions followed by CNS depression, respiratory failure, death. Chronic exposure may cause hepatic damage.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: Severe symptoms from 1-3g; do not exceed 8 hours exposure to 0.25 mg/$_M$3 (in water), sensitivity aspect. Susceptibility - host with liver disease more susceptible to chemical. LD$_{Lo}$ in skin of rabbit 5 mg/kg; orally in chicken 10 mg/kgl TD$_{Lo}$ orally in mouse 440 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (use: insecticide). Agricultural (use: insecticide)<br>GEOGRAPHICAL LOCATION: Not significant in industrial areas. Concentrations may be greater in farm areas.<br>OCCURRENCE: Rarely present. Permissible concentration in surface waters is 0.017 mg/l. Worst case results with increased concentrations. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Crystals insoluble in water.<br>IN TREATED EFFLUENT: Little or no effect; low biodegradability.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal); incineration inefficient for residual concentrations. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>ot likely to pass into aerosol state.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Little or no effect; normally applied as insecticide by dusting. Integrity is uncertain. |
| SUMMARY | Should not be a significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: ANTIMONY AND COMPOUNDS |
| | DISEASE OR EFFECT: Cause dermatitis, peratitis, conjunctivitis and nasal septal ulceration by contact, fumes or dust. |
| | EPIDEMIOLOGICAL SIGNIFICANCE: |
| | HOST SENSITIVITY/SUSCEPTIBILITY: Sensitivity - do not exceed 8 hours exposure to 0.5 mg/$_{M}$3 (ip) LD$_{50}$ in rats: 100 mg/kg (aq. suspension) |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturers of alloys, in fireworks, bullets and hard lead.) |
| | GEOGRAPHICAL LOCATION: Not significant. |
| | OCCURRENCE: In sea water the natural concentration is 0.45 ug/l and the worst case hazard concentration is 0.20 mg/l. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; insoluble in water |
| | IN TREATED EFFLUENT: Little or no effect. |
| | IN COOLING DEVICE: Little or no effect. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Not likely to become aerosolized. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Can form highly toxic stibine if antimony reacts with nascent hydrogen. Stibine can cause nausea, vomiting, headache, hemolysis, hematuria, abdominal pain and death. |
| SUMMARY | In and of itself antimony is not a significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | NAME: **ARSENIC AND COMPOUNDS**<br>DISEASE OR EFFECT: Highly toxic; (acute) following ingestion: nausea, vomiting, diarrhea. (Chronic) poisoning - exfoliation and pigmentation of skin, herpes, polyneuritis, degeneration of liver and kidney.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Highly toxic.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.5mg/$M^3$ |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (hardens metal; manufacturers of some glass; radioactive tracer; used in some medication).<br>GEOGRAPHICAL LOCATION: Significant in industrial areas.<br>OCCURRENCE: Relatively frequent in industrial area. Natural concentration in sea water is 2.60 ug/l. Worst case hazard concentration in sea water is 0.05 mg/l. In drinking water the range is 10-100 ug/l. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect. Insoluble in water.<br>IN TREATED EFFLUENT: Arsenic may combine to form other toxic compounds.<br>IN COOLING DEVICE: Vaporizing apparent at 100°F.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Hydroxide precipitation. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Since vaporizing apparent at 100°F, probability of aerosolization is very high.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Yellow modification returns to gray modification when exposed to ultra violet light. Loses luster on exposure to air. |
| SUMMARY | This may be a significant factor in cooling tower drift. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | NAME: ASBESTOS<br>DISEASE OR EFFECT: Prolonged exposure to dust can result in pulmonary fibrosis (asbestosis), emphysema, lung neoplasms.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: TCLo inhaled by humans 1.2 fibers/cc; by rat 12 mg/M3. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (heat resistant insulator cements, pipe coverings, inert filter medium, gloves, clothing, brake linings.)<br>GEOGRAPHICAL LOCATION: Significant in heavy industrial areas.<br>OCCURRENCE: Frequent in heavy industrial areas. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect, insoluble in water and most solvents.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Ultra-filtration. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>May become entrained in aerosol drift.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Remains stable. |
| SUMMARY | May become a significant factor in aersol drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | NAME: BENZENE |
| | DISEASE OR EFFECT: Acute effects (from inhalation or ingestion): irritation of mucous membranes, restlessness, convulsions, excitement, depression. Death may follow respiratory failure. Chronic effects: bone marrow depression and aplasia; rarely leukemia. Harmful amounts may be absorbed through the skin.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 10 ppm in air. Do not be exposed to concentrations greater than 25 ppm (in air). $TC_{Lo}$ inhaled by human 210 ppm (blood effects); $LD_{50}$ orally in mice 4700 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (use: manufacturers of medicinal chemicals, dyes, many organic compounds; solvent).<br>GEOGRAPHICAL LOCATION: Significant in areas of heavy industry.<br>OCCURRENCE: Frequently present. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Slightly soluble in water; will layer on surface; little effect on chemical.<br>IN TREATED EFFLUENT: No significant chlorine demand; difficult to biodegrade (affected by other constituents).<br>IN COOLING DEVICE: Highly flammable; boils at 80°C.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Biological (90-100% removal); activated carbon (90-100% removal); incineration (greater than 99.99% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: High probability due to high volatility;<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Should remain stable. |
| SUMMARY | May be a significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | NAME: BENZIDINE<br>DISEASE OR EFFECT: On ingestion may produce vomiting, nausea, liver and kidney damage. May cause injury to blood and bladder; tumors.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Known Carcinogen and poison<br>HOST SENSITIVITY/SUSCEPTIBILITY: LD orally in dogs 400 mg/kg. LD orally in mice 214 mg/kg. Rapidly absorbed through skin. $TC_{Lo}$ inhaled by man 18 mg/$M^3$. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturing of dyes; as reagent for $H_2O_2$ in milk and for detection of blood)<br>GEOGRAPHICAL LOCATION: Significant in industrial and dairy farm areas.<br>OCCURRENCE: Used in small amounts as an analytical reagent. Rare occurance |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; slightly soluble.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Improbably, due to poor solubility in water, high melting point, and very high boiling point.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Slowly unstable, due to decomposition in light. |
| SUMMARY | Not a significant factor in cooling device drift. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

## IDENTIFICATION

NAME: BERYLLIUM AND COMPOUNDS

DISEASE OR EFFECT: Contact dermatitis; chemical conjunctivitis, corneal burns, non-healing ulceration at site of injury, subcutaneous nodules. Acute: pneumonitis may result from a single exposure; occasionally fatal. Chronic: pulmonary granulomatous disease may appear in 3 mos.-15 yrs., often after short exposure to low concentration.

EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen

HOST SENSITIVITY/SUSCEPTIBILITY: Do no exceed 8 hours exposure to 2 ug/$_{M}$3; do not expose to concentrate 5 ug/$_{M}$3. TC$_{Lo}$ inhaled by man 300 mg/$_{M}$3.
Susceptibility - exposure to acid fumes may increase toxic effect.

## OCCURRENCE

POLLUTED WATER SOURCE: Industrial (source of neutrons; in some alloys, radio tubes)

GEOGRAPHICAL LOCATION: Significant in areas of heavy industry and research using radioactivity.

OCCURRENCE: In sea water the natural concentration is 0.0006 ug/l and the worst case hazard concentration range is from 0.1 -1.5 mg/l. In drinking water the range is 0.01-0.7 ug/l with mean of 0.013 ug/l.

## INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Little or no effect.

IN TREATED EFFLUENT: Little or no effect.

IN COOLING DEVICE: Little or no effect.

CONTROL METHODS IN WATER OR EFFLUENTS: Hydroxide precipitation.

## AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE:
Not likely to pass into aerosol state.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: High permeability to x-rays.

## SUMMARY

Not expected to be a signficant factor in cooling tower drift.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | NAME: BIPHENYL (DIPHENYL) |
| | DISEASE OR EFFECT: Can cause central nervous system depression, paralysis, convulsions.<br>EPIDEMIOLOGICAL SIGNIFICANCE: None known. Used in food industry.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do no exceed 8 hours exposure to 0.2 ppm (in air) or 1 mg/$_{M}^{3}$. LD$_{50}$ in rats 2.2 g/kg. TD$_{LO}$ inhaled by humans is 4400 mg/m$^{3}$. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (heat transfer agent, fungestat for oranges) in organic syntheses.<br>GEOGRAPHICAL LOCATION: Significant in heavy industrial areas.<br>OCCURRENCE: Occasionally occurs. May occur in sewage effluents in industrial areas, concentration unknown. Concentrations in natural waters unknown, but improbably. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; insoluble in water.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Very improbable, due to insolubility in water, moderate melting, and high boiling point.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Probably stable, if it could get into an aerosol. |
| SUMMARY | Not a significant factor in cooling device drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: BROMOCHLOROBENZENE (CHLORINATED BENZENE)<br>DISEASE OR EFFECT: Irritant to respiratory tract and as CNS depressant.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (use: synthesis of organic compounds) Municipal (formed during chlorination).<br>GEOGRAPHICAL LOCATION: Significant in industrial areas & in densely populated municipal areas.<br>OCCURRENCE: |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect. Insoluble in water.<br>IN TREATED EFFLUENT: Chlorination may form more chlorinated benzenes.<br>IN COOLING DEVICE:<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Not likely to become aerosolized due to its high boiling point and insolubility.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Probably stable. |
| SUMMARY | Should not be a significant factor in aerosol drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

IDENTIFICATION

NAME: CADMIUM AND COMPOUNDS

DISEASE OR EFFECT: Ingestion causes choking, vomiting, abdominal pain, diarrhea, tenesmus, inhalation causes cough, headache, vomiting, chest pain, pneumonitis; bronchopneumonia.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.2 mg/$_{M}$3 dust; 0.1 mg/$_{M}$3 fume. Do not expose to > 0.6 mg/$_{M}$3 dust or >3mg/$_{M}$3 fume. TD$_{Lo}$ inhaled by man 88$\mu$g/$_{M}$3; systemic effects.

OCCURRENCE

POLLUTED WATER SOURCE: Industrial (in easily fusible alloys; electroplating)

GEOGRAPHICAL LOCATION: Significant in areas of heavy industry.

OCCURRENCE: In sea water the natural concentration is 0.02 ug/l, and the worst case hazard concentration is 0.01 mg/l. In drinking water the range is 0.4-60 ug/l with a mean of 8.2 ug/l.

INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Little or no effect; insoluble in water.

IN TREATED EFFLUENT: Little or no effect.

IN COOLING DEVICE: Oxidizes in moist air.

CONTROL METHODS IN WATER OR EFFLUENTS: Hydroxide precipitation, borohydride reduction, ion exchange.

AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Compounds may possibly pass into aerosol state.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Oxidizes in moist air.

SUMMARY

Compounds may possibly occur in cooling tower drift.

AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: CARBON TETRACHLORIDE<br>DISEASE OR EFFECT: Poisoning by inhalation, ingestion or skin absorption. Acute: nausea vomiting, diarrhea, headache, stupor, renal damage leading to anuria and azotemia, liver injury. Chronic: primarily liver damage but kidney injury and visual disturbances also occur. Skin contact leads to dermatitis through defattening action.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: LC for mice 10,000 ppm (in air). TC$_{Lo}$ inhaled by man 20 ppm (central nervous system effects); TD$_{Lo}$ orally in mice 120 mg/kg (carcinogenic effects). |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (use: fire extinguisher manufacturers, dry cleaning, refrigerants, aerosols, propellants; organic chemical manufacturers.)<br>GEOGRAPHICAL LOCATION: Significant in heavy industrial areas.<br>OCCURRENCE: Rarely present. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect, only slightly soluble in water.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Volatile; boils at 77°C.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: High probability due to volatility<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Should remain stable. |
| SUMMARY | May become a significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | NAME: **CHLORDANE** |
| | DISEASE OR EFFECT: Acute poisoning through ingestion, inhalation, and absorption - degradation of liver irritability convulsions, depression. Moderately irritating to skin.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.5 mg/M3 (in water). LD$_{50}$ in rats: 457-590 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (pesticide manufacturers) Agricultural (use: pesticide, insecticide)<br>GEOGRAPHICAL LOCATION: Greater probability of occurrence in rural farm and orchard areas<br>OCCURRENCE: Permissible concentration in surface water is 0.003 mg/l, worst case results with increased concentrations. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect, insoluble in water.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect, difficult to degrade.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal); incineration inefficient for residual concentrations ( 50% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>May possibly become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Should remain stable. |
| SUMMARY | May possibly become significant in aerosol drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | **NAME:** CHLORINATED BENZENES (CHLOROBENZENE, HEXACHLOROBENZENE)<br>**DISEASE OR EFFECT:** Low systemic toxicity; mild skin irritation on prolonged contact.<br>**EPIDEMIOLOGICAL SIGNIFICANCE:**<br>**HOST SENSITIVITY/SUSCEPTIBILITY:** Do not exceed 8 hours exposure to 75 ppm or 350 mg/$_M$3. |
| OCCURRENCE | **POLLUTED WATER SOURCE:** Municipal (may be produced during chlorination of sewage). Agricultural as a fungicide. Industrial (organic chemical industry, solvents for paints).<br>**GEOGRAPHICAL LOCATION:** Significant in heavily populated areas. High probability of occurrence in rural farm areas. Significant in industrial areas dealing with chemicals.<br>**OCCURRENCE:** Chemical concentration in surface waters - 0.25 mg/l. |
| INTEGRITY/SURVIVABILITY | **IN SURFACE WATER:** Little or no effect; moderately persistant, insoluble in water.<br>**IN TREATED EFFLUENT:** Concentrations may increase with chlorination.<br>**IN COOLING DEVICE:** Little effect; relatively high boiling points, moderately persistent.<br>**CONTROL METHODS IN WATER OR EFFLUENTS:** Activated carbon (90-100% removal); incineration (>99% removal). |
| AEROSOLIZATION | **PROBABILITY OF PASSAGE INTO AEROSOL STATE:**<br>It is not likely that these will aerosolize due to their high boiling point and insolubility.<br>**INTEGRITY IN AIR AND/OR AEROSOL FOMITES:**<br>Probably remains stable. |
| SUMMARY | These should not be significant in cooling tower drift due to the low probability of aerosolization and low level of toxcity. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| | NAME: CHLORINATED ETHANES (1, 2 - DICHLOROETHANE) |
| IDENTIFICATION | DISEASE OR EFFECT:<br>Vapors produce irritation of respiratory tract and conjunctiva corneal clouding, equilibrium disturbances, narcosis, and abdominal cramps.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: The lowest toxic dose ingested by man is 428 ug/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (organic chemical industry; insecticidal fumigant, tobacco flavoring, general cleaning agent). Agricultural (insecticide). Municipal (chlorination may produce chemical).<br>GEOGRAPHICAL LOCATION: Significant in chemical industry area. Significant in rural farm areas. Significant in drinking water treatment areas. Higher probability of occurrence in orchard areas.<br>OCCURRENCE: Frequently present. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER:<br>No effect.<br>IN TREATED EFFLUENT: Chlorination may increase concentration of chemical.<br>IN COOLING DEVICE:<br>May react with free chlorine ions.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>May possibly pass into aerosol state.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Should remain stable |
| SUMMARY | May be a significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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| IDENTIFICATION | NAME: CHLORINATED ETHYLENES<br>DISEASE OR EFFECT: Moderate dose like alcohol intoxication; higher concentrations result in narcotic effect; death from ventricular fibrillation.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 100 ppm (in air); do not be exposed to concentrations > 200 ppm (in air). |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (solvent; dry cleaning; manufacturing of organic chemicals; fumigant anesthetic. Municipal (formed during chlorination process of drinking water).<br>GEOGRAPHICAL LOCATION: Significant in industrial and municipal areas.<br>OCCURRENCE: Frequently present in industrial and municipal areas. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Practically insoluble in water; slowly decomposes (with formation of HCl) by light in presence of moisture.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>May possibly aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Slowly decomposes (with formation of HCl) by light in presence of moisture. |
| SUMMARY | Not a significant factor in cooling device drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

**NAME:** CHLORINATED NAPTHALENE

**DISEASE OR EFFECT:** Poisoning by ingestion of large doses, inhalation or skin absorption, nausea, vomiting, headache, anaphoresis, hematuria, hemolytic anemia, fever, hepatic necrosis, convulsions, coma.

**EPIDEMIOLOGICAL SIGNIFICANCE:**

**HOST SENSITIVITY/SUSCEPTIBILITY:** $LD_{50}$ in rats range from 1540 to 2078 mg/kg and $LD_{50}$ in mice; 886-1091 mg/kg.

**OCCURRENCE**

**POLLUTED WATER SOURCE:** Industrial (solvent for oils, fats, DDT).

**GEOGRAPHICAL LOCATION:** Significant in industrial areas.

**OCCURRENCE:** Frequently present in industrial areas.

**INTEGRITY/SURVIVABILITY**

**IN SURFACE WATER:** Little or no effect; insoluble in water.

**IN TREATED EFFLUENT:** Little or no effect.

**IN COOLING DEVICE:** Little or no effect

**CONTROL METHODS IN WATER OR EFFLUENTS:** Absorption, adsorption by natural or synthetic resins.

**AEROSOLIZATION**

**PROBABILITY OF PASSAGE INTO AEROSOL STATE:**

Low probability due to poor solubility.

**INTEGRITY IN AIR AND/OR AEROSOL FOMITES:**
Uncertain

**SUMMARY**

Not likely to be a factor in cooling tower drift.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| | NAME: CHLORINE |
| IDENTIFICATION | DISEASE OR EFFECT: A powerful irritant which may cause fatal pulmonary edema.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 1 ppm or 3 mg/$M^3$; 4 ppm in air - detected by smell; 30 ppm will cause coughing. |
| OCCURRENCE | POLLUTED WATER SOURCE: Municipal (used to disinfect waste water, drinking water). Industrial (manufacturers of chlorinated hydrocarbons, plastics, rubber).<br>GEOGRAPHICAL LOCATION: Greater probability of occurrence in high density municipal areas. Significant in heavy industrial areas.<br>OCCURRENCE: Always present in municipal areas. Frequently present in industrial areas. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Very reactive; combines with all other elements except the noble gases and carbon. Oxides are very reactive oxidizers.<br>IN TREATED EFFLUENT: Concentrations increased with chlorination.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Chlorinated water and chloramines are likely to become aerosolized after reacting with free ions.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Chlorine will react readily with other organic material in drift, producing toxic chloramines. |
| SUMMARY | A significant problem in drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: CHLOROFORM<br>DISEASE OR EFFECT: Hypertension, respiratory and myocardial depression; death.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not expose to concentration of 150 ppm (in air) or 240 mg/M$^3$. TD$_{Lo}$ inhaled by human 10 ppm. TD$_{Lo}$ orally in mice 18 gm/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (as solvent, cleansing agent, insecticide, formerly inhalation anesthetic; in fire extinguishers). Municipal (formed during chlorination of wastewater and drinking water). Agricultural (as insecticide).<br>GEOGRAPHICAL LOCATION: Significant in industrial areas. Significant in treated water systems of municipal areas. Great probability of occurrence in rural farm areas.<br>OCCURRENCE: occurs frequently |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; only slightly soluble in water; very persistent.<br>IN TREATED EFFLUENT: Concentration may increase with chlorination.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% reduction). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Very high, due to extreme volatility.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Questionable, due to instability in light. |
| SUMMARY | This could possibly be significant in cooling tower drift. |

TOXIN

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: 2 - CHLOROPHENOL (m,o,p)

DISEASE OR EFFECT: Increase then decrease in rate of respiration, blood pressure, urinary output; fever; increased bowel action; motor weakness, collapse with convulsions and death. Lung, liver, kidney damage. Contact dermatitis.

EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen; may be absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY: Sensitivity ranges from $LD_{50}$ orally in rats is 0.57 mg/kg for M-Chlorophenol to 0.67 mg/kg for O-, and p- Chlorophenols.

**OCCURRENCE**

POLLUTED WATER SOURCE:
p-Chlorophenol is used as a topical antiseptic.

GEOGRAPHICAL LOCATION:
Use is unrelated to a particular geographical location.

OCCURRENCE:
Normal occurance is not known.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER:
Soluble in water

IN TREATED EFFLUENT:
Would become a saturated pentachlorophenol when undergoing chlorination.

IN COOLING DEVICE:
Little or no effect.

CONTROL METHODS IN WATER OR EFFLUENTS:

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE:
May possibly become aerosolized due to its solubility.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:
Should remain stable.

**SUMMARY**

This may become a significant factor in cooling tower drift.

AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **CHROMIUM AND COMPOUNDS**<br>DISEASE OR EFFECT: Dermal contact - primary irritation and ulceration as well as allergic eczema. Inhalation - nasal irritation, septal perforation, bronchogenic carcinoma; ingestion causes violent G.I. irritation with vomiting and diarrhea. Renal injury.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen. Salts present most considerable hazards.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.5 mg/$_{M}$3 solution of chromic and chromous salts, or 1 mg/$_{M}$3 metal and insoluble salts. Do not expose to concentrations >1 mg/10$_{M}$3 chromic acid and chromates. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturers of chrome steel and stainless steel, chrome plating).<br>GEOGRAPHICAL LOCATION: Significant in metal industrial areas.<br>OCCURRENCE: In sea water the natural concentration is 0.04 ug/l and the worst case hazard concentration is 0.05 - 0.1 mg/l. In drinking water the range is 3-40 µg/l with a mean of 3.2 µg/l. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; insoluble in water.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: May plate out on metal parts.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Hydroxide precipitation. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Chromium itself should not aerosolize; chromium salts may.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Very stable. Not oxidized even in presence of moisture. |
| SUMMARY | Salts may become a significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| | NAME: **COPPER AND COMPUNDS** |
| IDENTIFICATION | DISEASE OR EFFECT: Salts are strong irritants to skin and mucus membranes; copper oxide fumes may cause metal fume fever.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.1 $mg/m^3$ copper fume or 1 $mg/m^3$ dusts and mists. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturing of copper alloys, conductors)<br>GEOGRAPHICAL LOCATION: Significant in industrial areas<br>OCCURRENCE: In seawater the natural concentration is 1.00 µg/l with the worst case concentration at 0.05 mg/l. In drinking water the concentration is usually 30 µg/l. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little effect; insoluble in water. Forms carbonate in presence of moisture. Some salts are water soluble.<br>IN TREATED EFFLUENT: Little effect<br>IN COOLING DEVICE: Little effect<br>CONTROL METHODS IN WATER OR EFFLUENTS: Hydroxide precipitation, oxide precipitation, ion exchange. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Not likely for the element to become aerosolized although some salts may.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Forms carbonate in presence of moist air. |
| SUMMARY | Salts may be a significant factor in drift, especially since copper is the base of may biocidal control agents. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: CYANIDES (BARIUM, CALCIUM, HYDROGEN, POTASSIUM, SODIUM, ZINC) |
| | DISEASE OR EFFECT: High concentration can cause death due to respiratory arrest; chronic concentration causes fatigue, weakness.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 5 mg/$_M3$. Average fatal dose 50 to 60 mg. $LD_{50}$ in rats, 10 mg.kg potsddium cyanide. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (as fumigant, rodenticide, electroplating and metallurgy.<br>GEOGRAPHICAL LOCATION: Significant in industrial areas.<br>OCCURRENCE: In sea water the worst case hazard concentration is 0.005 - 0.01 mg/1. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Calcium cyanide soluble in water and liberates poisonous hydrogen cyanide; most salts very soluble in water.<br>IN TREATED EFFLUENT: Probably form cyanates when exposed to chlorination.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Chlorination, ozonation. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>High probability of these passing into the aerosol state due to extreme solubility.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Potassium cyanide is sensitive to light. Most decompose in moist air. |
| SUMMARY | These may become significant factors in cooling tower drift for the areas proximate to the device due to aerosolization and extreme toxicity. For areas some distance from the device, there should be no appreciable risk to their decomposition. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: DDT AND METABOLITES

DISEASE OR EFFECT: Acute effects - death; chronic effects - hepatic damage, central nervous system degeneration, agranulocytosis; readily absorbed through skin.

EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen ; readily absorbed through the skin. Poisoning by absorption, inhalation or ingestion.

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 1 mg/$_M3$. $TD_{LO}$ orally in humans 16 mg DDT/kg (central nervous system effects); in mice 39 gm/kg (neoplastic effects).

**OCCURRENCE**

POLLUTED WATER SOURCE: Industrial (pesticide manufacturers). Agricultural (formerly used as insecticide). Municipal (metabolite may be formed during waste and drinking water treatment if DDT is present).

GEOGRAPHICAL LOCATION: Higher probability of occurrence in areas of agriculture, farming. Not significant in other areas.

OCCURRENCE: Frequently present (but declining) in areas of industry and agriculture. Rarely present in municipal areas.
Permissible concentration in surface water is 0.042 mg/l, worst case results with increased concentrations.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: Little or no effect; practically insoluble in water; persistent.

IN TREATED EFFLUENT: Metabolites may form during treatment of sewage and drinking water.

IN COOLING DEVICE: Little or no effect. Increased solubility in solvents at higher temperature.

CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal); incineration (95->99% removal)

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

May be come aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Should remain stable.

**SUMMARY**

A probable drift contaminant in agricultural areas.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: DIALBYL ETHERS (Diglycidyl, n-Butye glycidyl, allyl glycidyl, chloromethyl methyl ether)<br>DISEASE OR EFFECT: Neoplastic effects<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not expose to concentration $>$0.5 ppm (in air) or 2.5 mg/m$^3$ (diglycidyl); do not exceed 8 hours exposure to 50 ppm or to 270 mg/m$^3$ (butyl glycidyl); do not expose to concentration $>$10 ppm (in air) or 45 mg/m$^3$ (allyl glycidyl) - $TC_{Lo}$ inhaled by mouse 6 mg/m$^3$. |
| OCCURRENCE | POLLUTED WATER SOURCE:<br>GEOGRAPHICAL LOCATION:<br>OCCURRENCE: |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER:<br>IN TREATED EFFLUENT:<br>IN COOLING DEVICE:<br>CONTROL METHODS IN WATER OR EFFLUENTS: |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Uncertain, probability low<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Uncertain |
| SUMMARY | Not likely to be a factor in cooling tower drift. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: DICHLOROBENZENES<br>DISEASE OR EFFECT: Acute doses cause central nervous system depression; chronic doses cause liver and kidney injuries.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed exposed concentration above 50 ppm (in air) or 300 mg/$_M3$ (in water). $TD_{Lo}$ orally in humans 300 mg/kg; $LD_{50}$ orally in mice 950 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (organic chemical industry; pesticide manufacturing industry). Municipal (found in small quantities during chlorination of drinking). Agricultural (as pesticide).<br>GEOGRAPHICAL LOCATION: Significant in industrial areas. Great probability of occurrence in rural farm areas.<br>OCCURRENCE: Rarely present in industrial and agricultural areas. Frequently present in small quantities in municipal areas. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; practically insoluble in water, persistent, high boiling point.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon. (90-100% removal); incineration (>99% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Most probably will not become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Remains stable. |
| SUMMARY | Not expected to be a significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: DICHLOROBENZIDINE (3'3 - Dichlorobenzidine) |
| | DISEASE OR EFFECT: May cause allergic skin reactions. |
| | EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen |
| | HOST SENSITIVITY/SUSCEPTIBILITY: $LD_{Lo}$ orally in rats 4740 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturers of azo dyes). |
| | GEOGRAPHICAL LOCATION: Significant in industrial areas. |
| | OCCURRENCE: Occasionally occurs. May occur in sewage effluents in industrial area, concentration unknown. Concentration in natural waters unknown, but improbable. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect, practically insoluble in water. |
| | IN TREATED EFFLUENT: Little or no effect. |
| | IN COOLING DEVICE: Little or no effect. |
| | CONTROL METHODS IN WATER OR EFFLUENTS: Extraction, absorption, adsorption by natural or synthetic resins. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Very improbable, due to poor solubility in water and high melting point. |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Probably stable, if it could get into an aerosol. |
| SUMMARY | Not a significant factor in cooling device drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: DICHLOROETHYLENES (1, 1 DICHLOROETHYLENE, VINYLIDENE CHLORIDE) |
| | DISEASE OR EFFECT: Irritant to skin, mucus membranes; narcotic in high concentrations; has caused liver, kidney injury in experimental animals.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Not known<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hour exposure to 100 ppm or 400 mg $1_{M}3$. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturers of some polymer plastics.)<br>GEOGRAPHICAL LOCATION: Significant in some industrial areas.<br>OCCURRENCE: May occur in sewage effluents in industrial areas, concentration unknown. Concentration in natural waters unknown, but improbable. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect, practically insoluble.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Absorption by natural or synthetic resins, carbon adsorption. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Very improbable, due to insolubility in water.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Unstable, polymerizes to a plastic in the presence of oxygen and temperatures above 0° |
| SUMMARY | Not a significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **2,4 DICHLOROPHENOL (DCP)** |
| | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE: **Suspected carcinogen**<br>HOST SENSITIVITY/SUSCEPTIBILITY: **$TD_{Lo}$ on skin of mouse 1600 mg/kg** |
| OCCURRENCE | POLLUTED WATER SOURCE:<br>**Agricultural; pesticides. May occur in chlorinated sewage effluents; also from steel mills, coke mills and chemical plants.**<br>GEOGRAPHICAL LOCATION:<br>**Industrial areas**<br>OCCURRENCE: **Worst case concentrations in surface water ranges from 0.001 - 0.014 mg/l** |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER:<br>**Slightly soluble in water**<br>IN TREATED EFFLUENT:<br>**May increase concentration with chlorination.**<br>IN COOLING DEVICE:<br>**Little or no effect.**<br>CONTROL METHODS IN WATER OR EFFLUENTS: |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>**May possibly become aerosolized due to slight solubility.**<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>**Probably remains stable.** |
| SUMMARY | **May possibly become significant in cooling tower drift.** |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | **NAME:** DICHLOROPROPANE & DICHLOROPROPENE |
| | DISEASE OR EFFECT: Irritating to mucus membranes. Liver and kidney injury produced in experimental animals.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Not known<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 75 ppm (in air) or 350 mg/$_M$3. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturers of soil fumigant). Agricultural (soil fumigant for control of nematodes).<br>GEOGRAPHICAL LOCATION: Significant in industrial areas. Greater probability in farming areas.<br>OCCURRENCE:<br>May occur in sewage effluents from industrial areas, concentration unknown. Concentrations in natural waters not know, but probable. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Absorption by natural or synthetic resins. Carbon adsorption. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Improbable, due to slight solubility in water and boiling temperature of 87°.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Probably stable. |
| SUMMARY | Not a significant factor in cooling device drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: DIELDRIN<br>DISEASE OR EFFECT: Acute dose - death; chronic dose - hepatic damage, central nervous system degeneration, agranulocytosis. Readily absorbed through skin.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: $LD_{50}$ orally in rats 87 mg/kg. $LD_{Lo}$ - orally in human 28 mg/kg; $LD_{50}$ orally in chickens 20 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (pesticide manufacturers, wool processing). Agricultural (insecticide).<br>GEOGRAPHICAL LOCATION: Significant in some industrial areas. Higher probability in rural farming areas.<br>OCCURRENCE: Rarely present in industrial areas. Frequent in agricultural areas. Permissible concentration in surface waters if 0.017 mg/l, worst case results with increased concentrations. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; practically insoluble in water, relative high melting point, persistant.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal); incineration inefficient for residual concentrations ( 50% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>May possibly become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Remains stable. |
| SUMMARY | A probable drift contaminant in agricultural areas. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **2,4 DIMETHYL PHENOL**<br>DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: On skin of mice $LD_{Lo}$ is 5600 mg/kg; administered internally $LD_{Lo}$ is 150 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (found in manufacturing of organic chemicals, pharmaceuticals, plastics, disinfectants, solvents, insecticides and fungicides); Agricultural (found in insecticides and fungicides); Municipal.<br>GEOGRAPHICAL LOCATION: Significant in manufacturing areas; high probability of occurrence in rural farm areas; at municipal biological sewage treatment plants.<br>OCCURRENCE: Frequently present |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: May degrade in water (approximately 2 months for complete degradation).<br>IN TREATED EFFLUENT: No effect of chlorination; small quantities formed during biological treatment.<br>IN COOLING DEVICE: May readily degrade.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Biological treatment (95% - 100% reduction); activated carbon (95% - 100% reduction); incineration ($>$ 95% reduction). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>May possibly pass into aerosol state if found in make-up water.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Slow degradation in presence of moisture. |
| SUMMARY | Not a significant factor in cooling device drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **2, 6 - DINITROTOLUENE**<br>DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 1.5 $mg/M^3$; readily absorbed through skin. Orally in rats $LD_{50}$ 177 mg/kg; orally in mice $LD_{50}$ 1000 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (explosives manufacturers, organic chemical industry). Municipal (small quantities may be formed by bacterial treatment of sewage).<br>GEOGRAPHICAL LOCATION: Significant in some industrial areas.<br>OCCURRENCE: Rarely present. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER:<br>IN TREATED EFFLUENT: Small quantities may be formed by biological sewage treatment.<br>IN COOLING DEVICE:<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal); biological treatment systems; incinerations. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Low probability due to high melting temperature and insolubility in water.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Uncertain. |
| SUMMARY | Not likely to be a factor in cooling tower drift. |

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## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: DIPHENYLHYDRAZINE (1, - dephenylhydrazine) |
| | DISEASE OR EFFECT: Tumors<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected Carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: Insufficient data to determine risk. $LD_{50}$ orally in rats 301 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (reagent for arabinose and lactose manufacturers).<br>GEOGRAPHICAL LOCATION: Found in drug and chemical industrial areas.<br>OCCURRENCE: Remote possibility of occurrence in sewage effluents in industrial areas, concentration unknown, occurrence in natural waters improbable. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; insoluble in water.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Very improbable, due to insolubility in water and high boiling point.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Probably stable, if it could get into an aerosol. |
| SUMMARY | Not a significant factor in cooling device drift. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **ENDOSULFAN AND METABOLITES** |
| | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: $LD_{50}$ orally in rats 28 mg/kg;in ducks 34 mg/kg; and in wild birds 35 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Agricultural and Industrial (found in insecticides)<br>GEOGRAPHICAL LOCATION: Greater probability of occurrence near rural farm areas (insecticide). Significant in manufacturing of insecticides.<br>OCCURRENCE: |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little effect; practically insoluble in water.<br>IN TREATED EFFLUENT: Little effect<br>IN COOLING DEVICE: Little effect<br>CONTROL METHODS IN WATER OR EFFLUENTS: Extraction; absorption, adsorption by natural or synthetic resins. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Very low, due to being practically insoluble in water and having low volatility.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Questionable, due to reactivity with alkalies that may be present in aerosol drift. |
| SUMMARY | Not a significant factor in cooling device drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| | NAME: **ENDRIN AND METABOLITES** |
| IDENTIFICATION | DISEASE OR EFFECT: Acute effects - death by respiratory failure; chronic effects - hepatic damage.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.1 mg/$_{M}3$. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (pesticide manufacturers). Agricultural (insecticide, minor constituent in dieldrin).<br>GEOGRAPHICAL LOCATION: Significant in industrial areas of pesticide manufacturers. Greater probability of occurrence in rural farm areas.<br>OCCURRENCE: Permissible concentration in surface waters 0.001 mg/l, worst case results with increased concentrations. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; insoluble in water, persistent.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal), incineration inefficient for residual concentrations ( 50% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: May possibly pass into aerosol state.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Probably remains stable. |
| SUMMARY | Probably not a significant factor in drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **ETHYLBENZENE**<br>DISEASE OR EFFECT: Narcotic in high concentrations; irrtating to eyes, skin, mucus membranes.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Administered to the human eye $TD_{Lo}$ 200 ppm. Do not exceed 8 hour average exposure to 100 ppm (air). |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial<br>GEOGRAPHICAL LOCATION: Significant in industrial areas of petroleum refining, organic chemical industry<br>OCCURRENCE: Frequently present. Worst case chemical concentration in surface water $<0.25$ mg/l |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little effect; practically insoluble in water, difficult to biodegrate.<br>IN TREATED EFFLUENT: Little effect; no significant chlorine demand.<br>IN COOLING DEVICE: Boiling point close to maximum temperature<br>CONTROL METHODS IN WATER OR EFFLUENTS: activated carbon (90 - 100% reduction); biological treatment (90 - 100% reduction). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Probably will not become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Probably remains stable. |
| SUMMARY | This should not be a significant factor in aerosol drift. |

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## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME HALOETHER (1,2 BIS - CHLOROETHYOXY ETHANE) |
| | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>$LD_{50}$ orally in rats is 250 mg/kf; $LD_{50}$ orally in guinea pigs is 120 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (organic chemical industry)<br>GEOGRAPHICAL LOCATION: Significant in chemical industrial areas.<br>OCCURRENCE: |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER:<br>IN TREATED EFFLUENT: No effect; concentration may increase slightly with chlorination.<br>IN COOLING DEVICE:<br>Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Probably will not aerosolize due to high boiling point.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Probably remains stable. |
| SUMMARY | This should not be a significant factor in cooling tower drift. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

## IDENTIFICATION

NAME: **HALOMETHANES (METHYLBROMIDE, METHYLCHLORIDE, NITROMETHANE, TRICHLOROMETHANE, IODOMETHANE)**

DISEASE OR EFFECT: Narcotic in high concentrations; fatal pulmonary edema (Methylbromide); injury to liver, kidney, central nervous system may occur.

EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 100 ppm (in air) or 250 mg/$M^3$ (Nitromethane); do not expose to concentrations $>$ 5 ppm (in air) and 240 mg/$M^3$ (Trichloromethane); $LD_{Lo}$ on skin of rat 800 mg/kg.

## OCCURRENCE

POLLUTED WATER SOURCE: Industrial (manufacturing insect fumigant; refrigerant; solvent) Agricultural (insect fumigant).
BROMODICHLOROMETHANE - Industrial (used in fire extinguishers; solvent; synthesis intermediate); Municipal (formed during chlorination of wastes; fire extinguishers).

GEOGRAPHICAL LOCATION: Significant in some industrial areas. Greater probability of occurrence near rural farm areas as fumigant. Bromodichloromethane significant in industrial areas.

OCCURRENCE: Rarely present in industrial areas. Frequently present in municipal areas.

## INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Slightly soluble in water; easily biodegradeable.

IN TREATED EFFLUENT: Little effect

IN COOLING DEVICE: Little effect

CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90 - 100% removal): aeration.

## AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE:
Very high probabiliy of becoming aerosolized due to its solubility and low boiling points.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:
Remains stable.

## SUMMARY

These may present significant impact in cooling device drift due to their solubility, boiling points, and narcotic and carcinogenic effects.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **HEPTACHLOR AND METABOLITES** |
| | DISEASE OR EFFECT: Acute dose - death; chronic doses - hepatic damage. Stimulates the central nervous system, causes depression.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Poisoning from ingestion, inhalation or skin contamination.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.5 mg/M$^3$; serious effects at 1-3 g. Susceptibility - effects of poisoning more serious in presence of liver disease. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (pesticide manufacturing); Agricultural (insecticide for boll weevil)<br>GEOGRAPHICAL LOCATION: Significant in industrial areas of pesticide manufacturers. Greater probability of occurrence in cotton belt which uses boll weevil insecticide.<br>OCCURRENCE: Frequently present in agricultural areas. Permissible concentration in surface waters is 0.018 mg/l. Worst case results with increased concentrations. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; insoluble in water; persistent.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Melts at 96° C.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal); incineration inefficient for residual concentrations ( 50%). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>May possibly become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Probably remains stable. |
| SUMMARY | Probably not found as a drift contaminant. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **HEXACHLORO - 1,3 - BUTADIENE** |
| | DISEASE OR EFFECT: |
| | EPIDEMIOLOGICAL SIGNIFICANCE: |
| | HOST SENSITIVITY/SUSCEPTIBILITY: **Orally in rats $LD_{Lo}$ 300 mg/kg; administered internally in mice $LD_{50}$ 32 mg/kg.** |
| OCCURRENCE | POLLUTED WATER SOURCE: **Industrial (solvent for polymers; transformer liquid, hydraulic fluid; organic chemical industry). Municipal .** |
| | GEOGRAPHICAL LOCATION: **Municipal - may be formed during chlorination of drinking water. Greater frequency of occurrence near large cities (hydraulic fluids and rubber).** |
| | OCCURRENCE: **Rarely present, in industrial areas. Frequently present in large municipal areas.** |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: **Little effect, persistant** |
| | IN TREATED EFFLUENT: **Little effect** |
| | IN COOLING DEVICE: **Little effect** |
| | CONTROL METHODS IN WATER OR EFFLUENTS: **Activated carbon.** |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: |
| | INTEGRITY IN AIR AND/OR AEROSOL FOMITES: |
| SUMMARY | |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: **ISOPHORONE**

DISEASE OR EFFECT: Vapors have narcotic properties.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 25 ppm (in air) or 140 mg/M$^3$ ( in water).

**OCCURRENCE**

POLLUTED WATER SOURCE: Industrial (solvent; organic chemical manufacturing; finishes; lacquers manufacturing; pesticide manufacturing). Agricultural (pesticide).

GEOGRAPHICAL LOCATION: Significant in industrial areas. Greater probability of occurrence in rural farm areas (pesticide).

OCCURRENCE: Frequently present in industrial areas. Rarely present in agricultural areas.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: Little effect; insoluble in water; very persistent.

IN TREATED EFFLUENT: Little effect

IN COOLING DEVICE: Little effect

CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal).

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

May aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Should remain stable.

**SUMMARY**

Probably not a significant factor in cooling tower drift.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **LEAD AND INORGANIC COMPOUNDS**<br>DISEASE OR EFFECT: Acute dose - permanent brain damage; chronic doses - anemia.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.2 mg/$M^3$; $TD_{Lo}$ subcutaneous in rat 150 mg/kg (lead chromate). |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (tanks, pipes, etc.; radiation shields; bearing metal and alloys; metallurgy of steel and other metals; plastics; batteries; ceramics)<br>GEOGRAPHICAL LOCATION: Significant in heavy industrial areas<br>OCCURRENCE: In sea water, the natural concentration is 0.02 ug/l. with the worst case concentration 0.05 mg/l. In drinking water, the concentration range is 20-40 ug/l. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Attacked by pure water in presence of oxygen.<br>IN TREATED EFFLUENT: Little effect<br>IN COOLING DEVICE: Little effect<br>CONTROL METHODS IN WATER OR EFFLUENTS: Hydroxide precipitation |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Unlikely to become aerosolized due to its high boiling point (1740°C) and insolubility. Soluble salts could be aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Attacked by pure water in presence of oxygen. |
| SUMMARY | Could occur in drift and be a significant hazard. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: LINDANE (HEXACHLOROCYCLOHEXANE)<br>DISEASE OR EFFECT: Acute: death; chronic: hepatic damage in experimental animals. Vapors may irritate eyes, nose, throat.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen. May be absorbed through the skin.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Acute dosage - 150 mg/kg body weight. $LD_{Lo}$ orally in humans 840 mg/kg. Orally in mice $TD_{Lo}$ 62 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial and Agricultural<br>GEOGRAPHICAL LOCATION: In areas of medicinal manufacturing; insecticide manufacturing areas. Greater probability of occurrence in rural farm areas (insecticide).<br>OCCURRENCE: Rarely present |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little effect; insoluble in water; persistant.<br>IN TREATED EFFLUENT: Little effect<br>IN COOLING DEVICE: Little effect<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90 - 100% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Most probably would not pass into the aerosol state.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Most likely would remain stable. |
| SUMMARY | Probably not a significant factor in drift. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: MERCURY AND COMPOUNDS<br>DISEASE OR EFFECT: Acute dose - death within 10 days; chronic doses - kidney damage, muscle tremors, brain damage (alkyls).<br>EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen or toxin. May cause widespread poisoning of wildlife and acute or subacute poisoning in humans<br>HOST SENSITIVITY/SUSCEPTIBILITY: $TD_{Lo}$ inhaled by humans $169\ \mu g/m^3$. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (in thermometers, barometers, mercury lamps; extracting gold and silver from ores; amalgams in dentistry; cathodes, pharmaceuticals, anti-fouling paints, agricultural chemicals)<br>GEOGRAPHICAL LOCATION: Significant in heavy industrial areas and agricultural areas.<br>OCCURRENCE: Low levels indigenous to marine and fresh water in water, sediments, and biota. High levels of contamination have occurred as a result of industrial processes, poor disposal methods, or accidents. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Metal insoluble and not attached by water; salts soluble in water, slowly decomposed by sunlight.<br>IN TREATED EFFLUENT: Little effect<br>IN COOLING DEVICE: Little effect<br>CONTROL METHODS IN WATER OR EFFLUENTS: Borohydride Reduction |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Mercury slightly volatile at ordinary temperatures. Probability of passage into the aerosol state is good.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Salts slowly decompose in sunlight. |
| SUMMARY | Highly probable component of aerosol drift in areas in which nickel salts appear in make-up water, and very liable to be toxic to plants, animals and man. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: METHYL ETHYL KETONE (BUTANONE)

DISEASE OR EFFECT: Irritating to eyes & mucous membranes; narcotic in high concentrations.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 200 ppm (in air) or 590 mg/M$^3$.

**OCCURRENCE**

POLLUTED WATER SOURCE: Industrial (organic chemical industry: general solvent)

GEOGRAPHICAL LOCATION: Significant in chemical industrial areas.

OCCURRENCE: Frequently present in industrial areas.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: Very soluble in water; readily degrades.

IN TREATED EFFLUENT: Quickly degraded in efficient biological systems.

IN COOLING DEVICE: Less soluble at higher temperature; boils at 79.6° C.

CONTROL METHODS IN WATER OR EFFLUENTS: Biological treatment ( 90% removal); activated carbon (90-100% removal).

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Will possibly aerosolize due to its solubility in water.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Probably stable.

**SUMMARY**

May be of some concern in cooling tower drift.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **NAPHTHALENE**<br>DISEASE OR EFFECT: Coma and death if inhaled, ingested, or absorbed through skin in large quantities.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 10 ppm (in air) or 50 mg/M$^3$. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (use: moth ball manufacturing (decreasing); pesticides, fungicides; manufacturing dyes, resins, celluloid, asphalt)<br>GEOGRAPHICAL LOCATION: Significant in industrial waste water. Greater probability of occurrence near rural farm areas (fungicide).<br>OCCURRENCE: Frequently present in industrial areas. Rarely present in agricultural areas. Worst case chemical concentration in surface waters is 1.00 mg/l. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Insoluble in water; will sink; very volatile; difficult to degrade<br>IN TREATED EFFLUENT: Little effect<br>IN COOLING DEVICE: Very volatile at room temperature<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal); biological treatment (90-100% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: Extremely volatile resulting in high probability.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Sublimes at temperatures above its melting point 80.2°C, and it's volatile at room temperature. |
| SUMMARY | Could occur in cooling device drift. |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

## IDENTIFICATION

NAME: **NICKEL AND COMPOUNDS**

DISEASE OR EFFECT: Dermatitis in sensitive people; soluble salts can cause vomiting, diarrhea. Nickel salts are injurous to a variety of plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

Nickel is a suspected carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.001 ppm (in air) or 0.007 mg/$M^3$ (nickel carbonyl); and 1 mg/$M^3$ (metal and soluble compounds).

## OCCURRENCE

POLLUTED WATER SOURCE: Industrial (plating; alloys; coins; storage batteries; magnets; stainless steels; resistance wire; electronic and space applications)

GEOGRAPHICAL LOCATION: Significant in industrial waste water, especially in steel producing areas.

OCCURRENCE: Nickel salts are soluble and occur as leachate from nickel-bearing ores. Concentrations reported ranging from 5 to 900 ug/l.

## INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Not affected by water.

IN TREATED EFFLUENT: Little or no effect.

IN COOLING DEVICE: Little or no effect.

CONTROL METHODS IN WATER OR EFFLUENTS: Hydroxide precipitation; ion exchange; electrolysis.

## AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Little probability of metalic nickel passing into the aerosol state, but very high probability of salts becoming aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Remains stable.

## SUMMARY

Highly probable component of aerosol drift in areas in which nickel salts appear in make-up water, and very liable to cause injury to plants or irritation to animals and man.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

### IDENTIFICATION

NAME: NITRITES (SODIUM NITRITE)

DISEASE OR EFFECT:

Methemoslobia

EPIDEMIOLOGICAL SIGNIFICANCE:

Only to infants, from waters containing more than 10 mg/l nitrate of 1 mg/l nitrite.

HOST SENSITIVITY/SUSCEPTIBILITY: Orally in humans $LD_{Lo}$ 3 mg/kg.

### OCCURRENCE

POLLUTED WATER SOURCE: Agricultural (fertilizer). Industrial (manufacturing acids, pickling meats, fertilizer). May be discharged in sewage effluent.

GEOGRAPHICAL LOCATION: Greater probability of occurrence in rural farm areas.

OCCURRENCE Generally short lived due to rapid oxidation to nitrate. However, can present as nitrate in low DO waters.

### INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Soluble in water; oxidized to nitrates and metabolized.

IN TREATED EFFLUENT: May be produced by wastewater treatment.

IN COOLING DEVICE: If DO is maintained, nitrite will be oxidized to nitrate. Will remain as nitrite only if DO is low.

CONTROL METHODS IN WATER OR EFFLUENTS: Aeration

### AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Very probable, if it can survive the cooling device environment.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Will probably oxidize to nitrate, therefore a low probability of survival.

### SUMMARY

Not a significant factor in drift, even though it may occur in make-up water.

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## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| | NAME: **NITROBENZENE** |
| IDENTIFICATION | DISEASE OR EFFECT: Headaches, nausea, drowsiness, methemoglobinemia with cyanosis.<br>EPIDEMIOLOGICAL SIGNIFICANCE: May be absorbed through skin.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 1 ppm (in air) or 5 mg/M$^3$. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturing aniline & dyestuffs; solvent; in metal and shoe polish; manufacturing rubber chemicals; drugs, photographic chemicals refining lubricating oils, in soaps).<br>GEOGRAPHICAL LOCATION: Significant in heavy industrial areas.<br>OCCURRENCE: Frequently present in industrial areas. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Only slightly soluble, but readily reduced by biological degradation.<br>IN TREATED EFFLUENT: Little chlorine demand; reduced by biological degradation.<br>IN COOLING DEVICE: Volatile at high temperatures in presence of moisture.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon; biological treatment. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: May possibly become aerosolized.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Probably stable. |
| SUMMARY | May be a significant contaminant in drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **NITROPHENOL ( m,o,p )**<br>DISEASE OR EFFECT: CNS depression, methemoglobinemia, hyperthermia (Nitrophenol p).<br>EPIDEMIOLOGICAL SIGNIFICANCE: Not known<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Orally in rats LD50; 447 mg/kg<br>Orally in mice LD40; 14 14 mg/kg<br>Intraveneously in dogs LD50; 83 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (indicator; manufacturing many important chemical compounds)<br>GEOGRAPHICAL LOCATION: Significant in heavy industrial areas.<br>OCCURRENCE:<br>May occur in sewage effluents from industrial areas, concentration unknown. Concentrations in natural waters unknown and improbable. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Only slightly soluble in cold water.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: More soluble in warmer water.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Carbon Adsorption. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Possible, due to slight solubility in water and high boiling point.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: |
| SUMMARY | Probably not a significant factor in cooling device drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

NAME: **NITROSAMINES (N-NITROSODIMETHYLAMINE)**

**IDENTIFICATION**

DISEASE OR EFFECT: Has caused fatal poisoning, severe liver injury.

EPIDEMIOLOGICAL SIGNIFICANCE:
Potential carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY: Orally $LD_{Lo}$ in rats 30 mg/kg: in mice $TD_{Lo}$ 0.94 mg/kg.

**OCCURRENCE**

POLLUTED WATER SOURCE:
Used in many chemical manufacturing processes. End product of sewage treatment by action of nitrate-reducing bacteria.

GEOGRAPHICAL LOCATION:
Found in receiving waters of domestic and industrial effluents.

OCCURRENCE:
Frequently occurs; related to polluted conditions; actual concentraions unknown, but possible.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: No effect

IN TREATED EFFLUENT:

May be produced by wastewater treatment

IN COOLING DEVICE:

Little or no effect.

CONTROL METHODS IN WATER OR EFFLUENTS: Extraction; Absorption, Adsorption by natural or synthetic resins.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Very probable, because of solubility in water.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Probably stable.

**SUMMARY**

A highly significant hazard in cooling device drift, due to wide usage, high solubility, and potential carcinogenicity.

AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **PENTACHLOROPHENOL**<br>DISEASE OR EFFECT: Acute dose - death; chronic doses - lung, liver, kidney damage, contact dermatitis.<br>EPIDEMIOLOGICAL SIGNIFICANCE: May be absorbed through the skin.<br>HOST SENSITIVITY/SUSCEPTIBILITY: $LD_{50}$ orally in rats 180 mg/kg. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturing pesticides; wood & wood products preservative; organic chemical industry). Agricultural (insecticides, herbicides, algicides, fungicides).<br>GEOGRAPHICAL LOCATION: Significant in industrial areas. Greater probability of occurrence near rural farm areas.<br>OCCURRENCE: Rarely found in industrial areas. Frequently present in agricultural areas. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; practically insoluble in water (sodium salt is water soluble); persistent.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal). |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: May possibly aerosolize. Salts are more likely to pass into aerosol state.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Remains stable. |
| SUMMARY | May be a contaminant in drift and a health hazard. |

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## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: **PHENOL**

DISEASE OR EFFECT: Paralysis; death from respiratory failure or cardiac arrest. Renal and hepatic damage in chronic cases.

EPIDEMIOLOGICAL SIGNIFICANCE:

May be absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY: Average fatal dose 15 g.; death from 1.5 g. reported. Do not exceed 8 hours exposure to 5 ppm or 19 mg/$M^3$.

**OCCURRENCE**

POLLUTED WATER SOURCE: Industrial (general disinfectant; resin manufacturing; organic compounds and dyes). Reagent in chemical analysis.

GEOGRAPHICAL LOCATION: Significant in industrial areas.

OCCURRENCE: Permissible concentrations in surface water is 0.001 mg/l. Worst case results from increased concentrations up to 1.0 mg/l.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: Soluble in water: affected by light and air especially in presence of alkalinity.

IN TREATED EFFLUENT: Rapid uptake of chlorine; forms chlorophenol, di- and tri-chlorophenol.

IN COOLING DEVICE: Melting point at 40° C.

CONTROL METHODS IN WATER OR EFFLUENTS: Carbon adsorption

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Highly probable that this would become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Reddens on exposure to air and light, particularly in presence of alkalinity.

**SUMMARY**

May occur in drift, but not a significant hazard.

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: **PHTHALATE ESTERS (Dibutyl phthalate)**

DISEASE OR EFFECT: Ingestion may cause GI disturbances, affects the central nervous system causing headaches, tremor, drowsiness, convulsions, nypnosis, anesthesia.

EPIDEMIOLOGICAL SIGNIFICANCE: Limited animal experiments suggest low order of toxicity. Produced non-transmissible changes in offspring of rats.

HOST SENSITIVITY/SUSCEPTIBILITY: Orally in humans $LD_{Lo}$ is 140 mg/kg. Administered to rats lowest tolerated single dose is 8 mg/kg body weight. Do not exceed average 8 hour exposure to 5 $mg/m^3$ in air.

**OCCURRENCE**

POLLUTED WATER SOURCE: Used as plasticizers especially in PVC (Polyvinyl Chloride) plastics.

GEOGRAPHICAL LOCATION: Occur in samples of water, sediment and aquatic organisms in industrial and heavily populated areas.

OCCURRENCE: Occurs frequently in areas of plastic manufacturing.

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: Slightly soluble in water.

IN TREATED EFFLUENT:

IN COOLING DEVICE: Little or no effect.

CONTROL METHODS IN WATER OR EFFLUENTS:

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Not likely to become aerosolized due to very slight solubility and high boiling point.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Probably remains stable.

**SUMMARY**

Not significant in cooling device drift.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: POLYCHLORINATED BIPHENYLS (PCB's)<br>DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| OCCURRENCE | POLLUTED WATER SOURCE: **Industrial and Municipal**<br>GEOGRAPHICAL LOCATION: **Significant in heavy industrial areas (manufacturing electrical insulation; fire resistant heat transfer and hydraulic fluids, high temperature lubricants, adhesives, paints, etc.) Municipal; potentially formed during chlorination of sewage or drinking water containing biphenyl).**<br>OCCURRENCE: **Frequently present,** |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: **Little effect; persistent**<br>IN TREATED EFFLUENT: **Chlorination of sewage or drinking water containing biphenyl may form increase PCB concentration.**<br>IN COOLING DEVICE: **Little effect**<br>CONTROL METHODS IN WATER OR EFFLUENTS: **Activated carbon (90 - 100% removal).** |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: |
| SUMMARY | |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

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|---|---|
| IDENTIFICATION | NAME: **SECONDARY AMINES (DIMETHYL, DIETHYL, DI-ISOPROPYL)**<br>DISEASE OR EFFECT: **May be irritating to skin, mucous membranes.**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: **Do not exceed 8 hours exposure to 10 ppm (in air) or 18 mg/$M^3$.** |
| OCCURRENCE | POLLUTED WATER SOURCE: **Industrial (used in rubber and petroleum industries; resins, dyes, pharmaceuticals).**<br>GEOGRAPHICAL LOCATION: **Significant in industrial areas.**<br>OCCURRENCE:<br>**Frequently occurs in industrial areas.** |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: **Very soluble in water; degrades to ammonia which is toxic.**<br>IN TREATED EFFLUENT: **Rapidly takes up chlorine; easily degradable.**<br>IN COOLING DEVICE: **Will boil off at high temperatures**<br>CONTROL METHODS IN WATER OR EFFLUENTS: |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE: **Solubility, low boiling points, and volatility make the probability of aerosolization high.**<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>**Unstabilized di-isoprophl ready forms peroxides and is explosive.** |
| SUMMARY | **These may be a significant factor in cooling tower drift.** |

# AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

NAME: **SELENIUM AND COMPOUNDS (S. BROMIDE, CHLORIDE, MONOSULFIDE, OXIDE)**

IDENTIFICATION

DISEASE OR EFFECT: Nervousness, depression, dermatitis, G.I. disturbances, liver ailments in experimental animals.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.2 mg/$M^3$.

OCCURRENCE

POLLUTED WATER SOURCE: Industrial (photographic toning bath; manufacturing of colored glass; rubber processing, dehydrogenation of organic compounds.

GEOGRAPHICAL LOCATION: Significant in some industrial areas.

OCCURRENCE: In sea water, the natural concentration is 0.45 µg/l. and the worst case concentrations from 0.005 - 0.01 mg/l. In drinking water, the concentration is usually $<$10 µg/l. Occasionally in industrial pollution the concentration $>$500 µg/l.

INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Selenium bromide & chloride decompose in water; selenium oxide soluble in water.

IN TREATED EFFLUENT: May form more selenium chloride with chlorination.

IN COOLING DEVICE: Amorphous form reacts with water at 50° C forming selenious acid and hydrogen.

CONTROL METHODS IN WATER OR EFFLUENTS:

AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

May possibly become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Selenium bromide decomposes in moist air.

SUMMARY

Not expected to be a significant factor in cooling tower drift.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **SILVER AND COMPOUNDS**<br>DISEASE OR EFFECT: No serious toxic manifestations; argyria or aryrosis (grayish-blue discoloration of skin); many salts irritating to skin and mucous membranes. Inhalation should be avoided. Toxic to bacteria and lower life forms.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.01 mg/M$^3$. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (coinage; manufacturing of jewelry; tableware; specialized vessels and apparatus; dental alloys; electroplating). Has been used in purification of drinking water.<br>GEOGRAPHICAL LOCATION: Significant in industrial areas.<br>OCCURRENCE: In sea water the natural concentration is 0.3 µg/l. and the worst case concentration is 1-5 µg/l. In drinking water the concentration ranges from 0-2 µg/l with a mean of 0.13 µg/l. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Metal not affected by water; most salts are light sensitive.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Hydroxide precipitation; borohydride reduction; ion exchange. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Metal probably will not pass into the aerosol state although the salts may.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Most salts are light-sensitive. |
| SUMMARY | It is unlikely that these will be a significant factor for concern in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

NAME:

**SODIUM CHLORIDE**

IDENTIFICATION

DISEASE OR EFFECT:

May affect blood pressure or central nervous system

EPIDEMIOLOGICAL SIGNIFICANCE:

Generally not considered poisonous.

HOST SENSITIVITY/SUSCEPTIBILITY:

OCCURRENCE

POLLUTED WATER SOURCE:

Found in any polluted salt water source. Industrial; (metallurgy; mining; manufacturing of soaps, dyes; curing hides; freezing mixtures).

GEOGRAPHICAL LOCATION:

Found universally

OCCURRENCE:

Occurs frequently in all areas.

INTEGRITY/SURVIVABILITY

IN SURFACE WATER:

No change.

IN TREATED EFFLUENT:

Little or no change.

IN COOLING DEVICE:

Little or no change.

CONTROL METHODS IN WATER OR EFFLUENTS:

Desalination

AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Will most likely aerosolize.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Will remain in air or aerosol fomites.

SUMMARY

This is a significant and documented hazard from cooling device drift, particularly to vegetation.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **STYRENE**<br>DISEASE OR EFFECT: Irritating to eyes, mucous membranes; narcotic in high concentrations.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 100 ppm (in air); do not expose to concentrations >200 ppm (in air). Lowest toxic concentration inhaled by humans, 500 ppm, produces irritating effects. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (manufacturing of plastics, rubber; resins; insulator).<br>GEOGRAPHICAL LOCATION: Significant in industrial areas.<br>OCCURRENCE: |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Only sparingly soluble in water; exposure to light and air causes polymerization and oxidation to form peroxides, etc.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Carbon adsorption. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>May possibly aerosolize.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Polymerization and oxidation on exposure to light and air. |
| SUMMARY | Not expected to be a significant factor in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: **THALLIUM AND COMPOUNDS**<br>DISEASE OR EFFECT: Death in acute cases by nausea, vomiting, diarrhea, tingling, pain in extremities, coma, convulsions. Weakness and pain in extremities (polyneuritis), loss of hair in chronic cases.<br>EPIDEMIOLOGICAL SIGNIFICANCE: May be absorbed through the skin.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.1 mg/M$^3$ |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (salts used for rat and rodent poisons).<br>GEOGRAPHICAL LOCATION: Significant in some industrial areas.<br>OCCURRENCE: In sea water the natural concentration is 0.1 µg/1. and the worst case concentration is 0.05-0.10 mg/1. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: Little or no effect; Thallium insoluble in water; salts soluble.<br>IN TREATED EFFLUENT: Little or no effect.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Highly unlikely that this will pass into aerosol state.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES:<br>Oxidizes superficially in air. |
| SUMMARY | Not expected to be of significant concern in cooling tower drift. |

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

### IDENTIFICATION

NAME: **TOLUENE**

DISEASE OR EFFECT: Narcotic in high concentrations; may cause mild macrocytic anemia but not leukopenia.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 200 ppm (in air). Do not be exposed to concentrations $>$300 ppm.

### OCCURRENCE

POLLUTED WATER SOURCE: Industrial (manufacturing of organic compounds; solvent; asphalt naptha constituent). Used to extract principles from plants.

GEOGRAPHICAL LOCATION: Significant in industrial areas.

OCCURRENCE: Frequently present in industrial areas.

### INTEGRITY/SURVIVABILITY

IN SURFACE WATER: Only slightly soluble in water; moderately biodegradable.

IN TREATED EFFLUENT: No significant chlorine demand; moderately biodegradable.

IN COOLING DEVICE: No effect due to temperature; moderately biodegradable.

CONTROL METHODS IN WATER OR EFFLUENTS: Activated carbon (90-100% removal); biological treatment (90-100% removal).

### AEROSOLIZATION

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

May possibly pass into aerosol state.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

Remains stable in aerosol state.

### SUMMARY

May occur in drift.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: **TOXAPHENE**

DISEASE OR EFFECT: Death in acute cases; irritation of skin, liver injury in chronic cases (experimental animals). May stimulate the central nervous system. Cause tremors, convulsions and death.

EPIDEMIOLOGICAL SIGNIFICANCE:
May be absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 0.5 mg/$M^3$.

**OCCURRENCE**

POLLUTED WATER SOURCE: Industrial ( manufacturing of insecticides). Agricultural (insecticides against army worms, boll weevil, etc.).

GEOGRAPHICAL LOCATION: Significant in industrial and agricultural areas.

OCCURRENCE:

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: Little or no effect; insoluble in water.

IN TREATED EFFLUENT: Little or no effect.

IN COOLING DEVICE: Little or no effect.

CONTROL METHODS IN WATER OR EFFLUENTS: Extraction; absorption; adsorption.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

Unlikely to become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES:

What aerosolizes remains stable.

**SUMMARY**

U.S.E.P.A. drinking water standard is .005 mg/l. May be detected in water at ppb level. Despite low probability of aerosolization, it remains a significant consideration in cooling tower drift.

TOXIN

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

**IDENTIFICATION**

NAME: VINYL CHLORIDE

DISEASE OR EFFECT: Narcotic in high concentrations; local frost bite if spilled on skin. May affect the cardiovascular system.

EPIDEMIOLOGICAL SIGNIFICANCE: Forms carcinogenic PCV's. Suspected carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY: Do not expose to concentrations exceeding 5 ppm. Do not exceed 8 hr. exposure to > 1ppm. Inhaled, lowest toxic dose to humans is 20 ppm.

**OCCURRENCE**

POLLUTED WATER SOURCE: Industrial (in plastics; as refrigerant; in organic synthesis).

GEOGRAPHICAL LOCATION: Significant in some industrial areas.

OCCURRENCE:

**INTEGRITY/SURVIVABILITY**

IN SURFACE WATER: Polymerizes (to potentially carcinogenic PCV's) in light or in presence of catalyst. Slightly decomposes in water.

IN TREATED EFFLUENT: Little or no effect.

IN COOLING DEVICE: Little or no effect.

CONTROL METHODS IN WATER OR EFFLUENTS: Absorption, carbon adsorption by natural or synthetic resins.

**AEROSOLIZATION**

PROBABILITY OF PASSAGE INTO AEROSOL STATE:

May possibly become aerosolized.

INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Polymerizes in light to form potentially carcinogenic PCV's.

**SUMMARY**

In and of itself, vinyl chloride should not be a significant factor in cooling tower drift but the PCV's may.

## AEROSOL DRIFT HEALTH HAZARD ASSESSMENT

| | |
|---|---|
| IDENTIFICATION | NAME: ZINC AND COMPOUNDS<br>DISEASE OR EFFECT: Fumes may cause weakness, fever, nausea, vomiting, skin irritation; ingestion of soluble salts can cause nausea, vomiting, purging.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours of exposure to 1 $mg/M^3$ - zinc chloride fumes. |
| OCCURRENCE | POLLUTED WATER SOURCE: Industrial (galvanizing sheet iron; in alloys; anti-corrosion coating on metals; electrical apparatus).<br>GEOGRAPHICAL LOCATION: Significant in some industrial areas.<br>OCCURRENCE: In sea water the natural concentration is 2.0 µg/l. and the worst case concentration is 0.02-0.10 mg/l. In drinking water the concentration range is 0.06-7.00 mg/l. with a mean of 1.33 mg/l. |
| INTEGRITY/SURVIVABILITY | IN SURFACE WATER: May form carbonate.<br>IN TREATED EFFLUENT: May form zinc chloride.<br>IN COOLING DEVICE: Little or no effect.<br>CONTROL METHODS IN WATER OR EFFLUENTS: Hydroxide precipitation; ion exchange. |
| AEROSOLIZATION | PROBABILITY OF PASSAGE INTO AEROSOL STATE:<br>Not probable due to high boiling point and insolubility.<br>INTEGRITY IN AIR AND/OR AEROSOL FOMITES: Forms carbonate on exposure to moist air. |
| SUMMARY | Not a significant factor in cooling tower drift. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME:
**ABSIDIA CORYMBIFERA**

HUMAN

DISEASE OR EFFECT:
Mucomycosis; Evasive fungal infection particularly of the face, nasal sinuses, and respiratory track.

EPIDEMIOLOGICAL SIGNIFICANCE:
Worldwide occurance of the organism, but infection is rare.

HOST SENSITIVITY/SUSCEPTIBILITY:
Infection occurs almost exclusively in diabetic or immunosuppressed individuals.

VEGETATION

DISEASE OR EFFECT:
Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:
Normally found in soil.

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:
Lesions in abdominal cavity; and digestive tract infections in small rodents. In parrots sporangia develop in air sacs.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:
Low susceptibility. Unlikely to cause the above effect.

COMMENTS

If introduced into water system, it would create devasting conditions for elderly and compromised hosts in the area.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ABSIDIA RAMOSA**

HUMAN

DISEASE OR EFFECT:
Mucormycosis; evasive fungal infection particularly of the face, nasal sinuses and respiratory tract.

EPIDEMIOLOGICAL SIGNIFICANCE:
Worldwide occurance of the organism but infection is rare.

HOST SENSITIVITY/SUSCEPTIBILITY:
Infection occurs almost exclusively in diabetics or immunosuppressed individuals.

VEGETATION

DISEASE OR EFFECT:
Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:
Normally widespread in soil

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:
In large animals some cases of bovine mycotic abortions have been reported. In swine, the wall of the small intestine and mesenteric lymph nodes become infected.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:
Generally susceptible

COMMENTS

If introduced into the water system, it would create devasting conditions for elderly and compromised hosts in the area.

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ACANTHAMOEBA (NAEGLENIA)**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Amebia Meningoemephalitis<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Acquired by swimming in brackish water. Cysts are hardy and easily enter the human body through inhalation.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Hosts are universally susceptible, chronically ill hosts are more susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | These two genera of free-living amebae have been reported in Florida, Texas, Virginia, Pennsylvania, New York and California. The cysts easily survive the cooling device environment and therefore pool a hazard when found in a water source used for make up water. |

PATHOGEN

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **ACTINOMYCES ISRAELI** |
| HUMAN | DISEASE OR EFFECT: Causes actinomycosis and pneumonia.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Actinomycosis is not a highly contractible disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Compromised hosts are most susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | This should not be a major risk from cooling tower drifts. |

PATHOGEN

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **ACTINOMYCES KERATOLYTICA** |
| HUMAN | DISEASE OR EFFECT:<br>Causes pitted keratolysis<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Not a likely organism to cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Hosts are generally susceptible when compromised. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | This should not present a significant risk if found in cooling tower drift. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | ACTINOMYCES spp. |
| HUMAN | DISEASE OR EFFECT:<br>May cause actinomycosis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Hosts are rarely susceptible and usually when they're compromised. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | This organism should not present significant risks if found in cooling tower drift. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: ADENOVIRUSES | |
| HUMAN | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>In dogs, kidney lesions develop and infectious hepatitus characterized by abdominal pain, vomiting, fever and pale mucous membranes. Birds develop spleen disease and poultry develop an acute, highly contagious respiratory disease.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Antibodies have been found in wild pheasants,redwings and swans with no disease associated.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Birds are more susceptible when compromised. Canine infection by direct contact only. Birds may contract disease by airborne transmission as well. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ANCYLOSTOMIASIS**

HUMAN

DISEASE OR EFFECT:
Intestinal infestation (Hookworm disease) with long-term effects of anemia with chronic secondary effects.

EPIDEMIOLOGICAL SIGNIFICANCE:
Widespread in U.S. Requires fecal contamination of soil and maturation of eggs in soil.

HOST SENSITIVITY/SUSCEPTIBILITY:
Hosts are universally susceptible acquired through contact with infected larvae.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Unlikely to be transmitted through cooling device.

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | |
| HUMAN | DISEASE OR EFFECT:<br>Angiostrongyliasis - disease of the central nervous system caused by a nematode.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Found predominantly in the Pacific Islands and Eastern Asia.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>General, particularly in debilitated host. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Presents no risk in the continental U.S. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: ASCARIS | |
| HUMAN | DISEASE OR EFFECT:<br>Mild small intestinal infection with the possibility of larvae producing Loeffler's syndrome.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Found universally in moist tropical environments . Transmission via infected dust is possible. Contracted through inhalation and ingestion.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Hosts are universally susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: ASPERGILLUS FLAVUS | |
| HUMAN | DISEASE OR EFFECT:<br>Aspergillosis; manifestalions as allergic bronchopulminary disease, and surface infections on abnormal tissues or artificial surfaces such as prosthetic heart valves.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Found universally<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Elderly or chronically ill populations are particularly sensitive. Hosts are universally susceptible due to new strains developing. |
| VEGETATION | DISEASE OR EFFECT:<br>Produces aflatoxins as product of growth on some seeds<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Low sensitivity |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Potentially a major risk. Also known to cause epidemic keratoconjunctivitis - acute conjunctivitis. Due to sporadic distribution and required close contact makes this an unlikely risk. |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ASPERGILLUS FUMIGATUS**

HUMAN

DISEASE OR EFFECT:

Aspergillosis; manifestations as allergic bronchopulminary disease, and surface infections on abnormal tissues or artificial surfaces such as prosthetic heart valves.

EPIDEMIOLOGICAL SIGNIFICANCE:

Found universally

HOST SENSITIVITY/SUSCEPTIBILITY:

Elderly or chronically ill populations are particularly sensitive. Hosts are universally susceptible due to development of new strains.

VEGETATION

DISEASE OR EFFECT:

Not pathogenic to plants

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT: Respiratory infections in a variety of mammals. Cases of abortion in cattle with mycotic lesions on placentae and fetus. Poultry contract aspergillosis which occurs in two forms; respiratory disease in young birds and ocassional adult birds found dead among a healthy flock. In a large variety of wild birds fungal growth in the respiratory tract and frequently in the peritoneum.

EPIDEMIOLOGICAL SIGNIFICANCE: Condition in birds usually associated with stress. Transmitted through inhalation. Pathogenicity is related to production of an exogenus toxin (aflatoxin) as well as direct tissue damage from growth of hyphae.

HOST SENSITIVITY/SUSCEPTIBILITY: General sensitivity in poultry is heightened by unclean, damp conditions which allow growth of fungus in the bedding. Released spores are inhaled by the birds. Compromised mammals are more susceptible than normal hosts.

COMMENTS

Potentially a major risk. Also known to cause epidemic keratoconjunctivitis - acute conjunctivitis but this is not a major concern because it requires close contact and has only sporadic distribution necessary for infection.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: ASPERGILLUS NIDULANS | |
| HUMAN | DISEASE OR EFFECT: Aspergillosis; manifestations as allergic bronchopulminary disease, and surface infections an abnormal tissues or artificial surfaces such as prosthetic heart valves<br>EPIDEMIOLOGICAL SIGNIFICANCE: Found universally.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Elderly or chronocally ill populations are particularly sensitive. Hosts are universally susceptible. |
| VEGETATION | DISEASE OR EFFECT: Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Potentially a major risk. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **ASPERGILLUS NIGER** |
| HUMAN | DISEASE OR EFFECT: Aspergellosis; manifestations as allergic bronchopulminary disease, and surface infections an abnormal tissues or artificial surfaces such as prosthetic heart valves.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Found universally<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Elderly or chronically ill populations are particularly sensitive. Hosts are universally susceptible due to new strains developing. |
| VEGETATION | DISEASE OR EFFECT:<br>Causes black mold of fruits and vegetables.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>High sensitivity to this organism. |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Potentially a major risk. Also know to cause epidemic keratoconjunctivitis - acute conjunctivitis. This is not a major concern because it requires close contact and is only sporadically distributed. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | ASPERGILLUS NIVEUS |
| HUMAN | DISEASE OR EFFECT:<br>Aspergillosis; manifestations as allergic bronchopulminary disease, and surface infections on abnormal tissues or artificial surfaces such as prosthetic heart valves.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Found universally.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Elderly or chronically ill populations are particularly sensitive. Hosts are universally susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Potentially a major risk. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **ASPERGILLUS RESTRICTUS** |
| HUMAN | DISEASE OR EFFECT: Aspergillosis; manifestations as allergic bronchopulminary disease and surface infections on abnormal tissues or artificial surfaces such as prosthetic heart valves.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Found universally.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Elderly or chronically ill populations are particularly sensitive. Hosts are universally sensitive. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Potentially a major risk. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **ASPERGILLUS TERREUS** |
| HUMAN | DISEASE OR EFFECT:<br>Aspergillosis; manifestations as allergic bronchopulminary disease, and surface infections on abnormal tissues or artificial surfaces such as prosthetic heart valves.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Found universally.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Elderly or chronically ill populations are particularly sensitive. Hosts are universally susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Potentially a major risk. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: BACILLUS ANTHRACIS

HUMAN

DISEASE OR EFFECT:
Manifestations as localized skin infections, respiratory and G.I. infections

EPIDEMIOLOGICAL SIGNIFICANCE:
Preliminarily requires skin contact. Inhalation causes pulmonary infection.

HOST SENSITIVITY/SUSCEPTIBILITY:
Hosts are universally sensitive.

VEGETATION

DISEASE OR EFFECT:
No pathogenic effects on plants.

EPIDEMIOLOGICAL SIGNIFICANCE:
Found widely distributed in soil and on plant surfaces.

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:
Anthrax in large animals. Peracute form results in death in 1-2 hours from massive septicemia. Localized form infection occurs in a skin wound. Localized form is less common. Dogs develop lesions in intestinal wall, mesynteric lymph nodes and spleen.

EPIDEMIOLOGICAL SIGNIFICANCE:
Transmission via ingestion, sercutaneous or inhalation.

HOST SENSITIVITY/SUSCEPTIBILITY:
Large animals, domestic and wild herbivores, are highly susceptible. Small animals resistant.

COMMENTS

Spores remain viable in water for years. If the cooling device is placed near areas of agricultural contamination, it could be a major risk but is is unlikely to occur in the continental U.S. Infected carcasses contaminate soil with spores which can infect animals as they graze or can be wind blown long distances. Decaying plants and soil act as a harboring agent.

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | BACILLUS CEREUS |
| HUMAN | DISEASE OR EFFECT:<br>Acute food poisoning<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Widely distributed organism in soil. Disease from poor food handling practices.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Unknown. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>The organism is found on plant surfaces.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Should not be a problem. Plants and soil harbor the organism. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **BACILLUS PILIFORMIS** |
| HUMAN | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Various rodents and rabbits develop liver lesions and intestinal hemorrhages.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>A low concentrations compromised hosts are susceptible, at high concentrations, greater than 10 ppm , these small animals are highly susceptible. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **BACILLUS SUBTILIS** |
| HUMAN | DISEASE OR EFFECT:<br>Inflammation of conjunctivitis, acute bacterial conjunctivae.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Epidemic in nature, widespread occurance.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Susceptiblity decreases with age for bacterial infections, remains for viral. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Decaying organic matter harbors the organism<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | The organism may be frequently found in soil and decaying plant matter. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: BACTEROIDES spp.

HUMAN

DISEASE OR EFFECT:

May cause pneumonia. Local tissues in the lung may become necrotic or abscessed.

EPIDEMIOLOGICAL SIGNIFICANCE:
The organism will remain viable under most conditions and is likely to cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY:
Most hosts are susceptible and will contract the disease.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

These organisms are likely to be found in aerosol drift and will present a cause for serious concern for public health.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **BALANTIDUM COLI**

HUMAN

DISEASE OR EFFECT:

Balantidiasis - acute diarrheal disease. Severity ranges from mild colitis to acute dysentary.

EPIDEMIOLOGICAL SIGNIFICANCE:

Evidence of this disease in man is low. Water borne epidemics may occur.

HOST SENSITIVITY/SUSCEPTIBILITY:

Man appears to have a high natural resistance.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Minimal, if any, problem in the U.S.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **BASIDIOBOLUS HAPTOSPORUS** |
| HUMAN | DISEASE OR EFFECT:<br>Mucormycosis; massive fungal infection particularly of the face, nasal sinuses and respiratory tract.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Worldwide occurance of the organism, but infection is rare.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Infection occurs almost exclusively in diabetic or immunosuppressed individuals. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | If introduced into water system, it would create devastating conditions for elderly and compromised individuals. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **BLASTOMYCES DERMATITIDIS**

### HUMAN

DISEASE OR EFFECT: North American Blastomyces: Chronic pulmonary disease with or without systemic dissemination, possible chronic cutaneous papular disease. South American: strain involving chronic mycosis, not found in U.S.

EPIDEMIOLOGICAL SIGNIFICANCE:
Rarely occurs in children. More common occurance in males than females.

HOST SENSITIVITY/SUSCEPTIBILITY:

Man is fairly resistant.

### VEGETATION

DISEASE OR EFFECT:

Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

### ANIMAL

DISEASE OR EFFECT:
In dogs, results in chronic debilitating pulmonary conditions characterized by extensive granulomas in the lungs. Skin and subcutaneous tissues may also be involved.

EPIDEMIOLOGICAL SIGNIFICANCE:
No evidence of transmission from one animal to another, or to man.

HOST SENSITIVITY/SUSCEPTIBILITY:
Believed to be contracted from organisms found growing in nature.

### COMMENTS

Universally found in the U.S., predominantly in South-eastern and Central portions.

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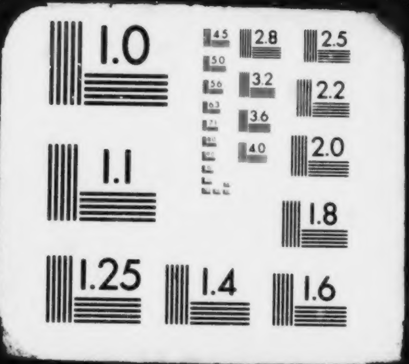
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## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: BORDETELLA BRONCHISEPTICA | |
| HUMAN | DISEASE OR EFFECT:<br>Pertussis - whooping cough<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Primarily transported through contact or droplet but is potentially transmissible through airborne route.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>All unimmunized persons are at risk although this country is widely immunized, many areas remain susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Known to cause respiratory infections in some species of small mammals.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Very low sensitivity unless compromised. |
| COMMENTS | Generally not a hazard. Should cases occur and the organisms survive, secondary dissemination could represent hazard. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **BORDETELLA PARAPERTUSSIS**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Pertussis - whooping cough<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Preliminarily transported through contact or droplet, but is potentially transmissible through airborne route.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>All unimmunized persons are at risk, although this country is widely immunized, many areas remain susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenci to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Generally not a hazard. Should cases occur and the organisms survive, secondary dissemination could represent a hazard. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **BORDETELLA PERTUSSIS**

HUMAN

DISEASE OR EFFECT:

Pertussis - whooping cough

EPIDEMIOLOGICAL SIGNIFICANCE:
Primarily transported through contact or droplet, but is potentially transmissible through airborne route.

HOST SENSITIVITY/SUSCEPTIBILITY:
All unimmunized persons are at risk; although this country is widely immunized, many areas remain susceptible.

VEGETATION

DISEASE OR EFFECT:

Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Generally not a hazard. Should cases occur and the organisms survive, secondary dissemination could represent a hazard.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: BRUCELLA ABORTUS

**HUMAN**

DISEASE OR EFFECT: Brucellosis; systemic infection with many chronic focal sites

EPIDEMIOLOGICAL SIGNIFICANCE:
Associated with animal workers and infected materials. Cattle and swine are major resevoirs.

HOST SENSITIVITY/SUSCEPTIBILITY:
Man is relatively resistant. Unapparent infections are common.

**VEGETATION**

DISEASE OR EFFECT:
Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT: In large animals effects begin as bacteriemia, after without clinical signs and subsequently localizes in the lymph nodes, reproductive organs, tendon sheaths, joints, etc. where it persists for long periods. In cattle, it is an important disease which produces abortion, and infection of the udder. Males develop orchitis and epididymitis. Similar effects found in wild ungulates.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:
Comparatively rare in wildlife. In large domestic animals, infection usually occurs through ingestion of discharges of aborting animals. Experimentally, it may be transmitted through the mucous of the eye. Wound contamination is also possible.

**COMMENTS**

Small risk in U.S., much greater in other countries, where water supply is contaminated by enzootic or endemic focus.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **BRUCELLA CANIS**

### HUMAN

DISEASE OR EFFECT:

Brucellosis: systemic infection with many chronic focal sites.

EPIDEMIOLOGICAL SIGNIFICANCE:

Associated with animal workers and infected materials. Cattle and swine are major reservoirs.

HOST SENSITIVITY/SUSCEPTIBILITY:

Man is relatively resistant. Unapparent infections are common.

### VEGETATION

DISEASE OR EFFECT:

Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

### ANIMAL

DISEASE OR EFFECT:

In dogs, this causes failure of conception and abortion in the bitch, and orchitis and sterility in the male.

EPIDEMIOLOGICAL SIGNIFICANCE:

Transmitted via coitus.

HOST SENSITIVITY/SUSCEPTIBILITY:

Compromised doys are most susceptible. Carriers exist which can spread infection.

### COMMENTS

Small risk in the U.S., much greater in other countries where water supply is contaminated by enzootic or endemic focus.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: BRUCELLA MELINTENSIS | |
| HUMAN | DISEASE OR EFFECT:<br>Brucellosis; systemic infection with many chronic focal sites.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Associated with animal workers and infected materials. Cattle and swine are major reservoirs.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Man is relatively resistant. Unapparent infections are common. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Small risk in U.S., much greater in other countries where water supply is contaminated by enzootic or endemic focus. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **BRUCELLA SUIS**

**HUMAN**

DISEASE OR EFFECT:

Brucellosis: systemic infection with many chronic focal sites.

EPIDEMIOLOGICAL SIGNIFICANCE:
Associated with animal workers and infected materials. Cattle and swine are major reservoirs.

HOST SENSITIVITY/SUSCEPTIBILITY:
Man is relatively resistant. Unapparent infections are common.

**VEGETATION**

DISEASE OR EFFECT:

Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:
Swine have severe lesions from abortions. Boars develop orchitis. Arthritis and spondylitis are also possible. This organism appears to be specific for swine although some isolated cases have been found in rodents and canines.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Many cases are asymptomatic and those can be carriers. Infection may induce no immune response so reinfection is possible.

**COMMENTS**

Some risk in U.S., much greater in other countries where water supply is contaminated by enzootic or endemic focus.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | CANDIDA ALBICANS |
| HUMAN | DISEASE OR EFFECT:<br>May cause enterocolotitis, meningitis, or pharyngitis. May also cause candidiasis and otitis externa.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Enterocolotitis is easily transmitted.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Compromised hosts are susceptible to meningitis and pharyngitis, otitis externa and candidiasis. Most hosts are highly susceptible to enterocolotitus. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Oral lesions in dogs. Lesions found in swine, colts, and calves as well as mastitis. Lesions in poultry involve mouth, crop, proventriculus and gizzard. These lesions may become confluent and involve large areas of these organs. Infected areas finally slough and leave ulcerations.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Transmission through ingestion.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Infection in large and small mammals is uncommon and is usually connected with compromised hosts, debilitated or an antibiotic therapy for long periods of time. Young birds are more susceptible to infection of the intestinal tract. As they grow older, they overcome the infection. Associated often with poor conditions and compromised hosts. |
| COMMENTS | |

PATHOGEN

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | CANDIDA spp |
| HUMAN | DISEASE OR EFFECT: May cause candidiasis or meningitis C. parapsilosis may cause otitis externa.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Compromised hosts are most susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Isolated cases found in rock doves from C. Krusei and skin abscesses found in lab rats and mice from C. Stellatoidea.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Compromised hosts are most susceptible |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | CHICKEN POX - ZOSTER |
| HUMAN | DISEASE OR EFFECT:<br>Acute viral disease characterized by skin rash. Once present virus may remain dormant in spinal end ganglion and later produce "shingles" particularly in the compromised host.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Universally distributed. May be contracted by direct contact, droplet, fomite, airborne transport of respiratory or vesicular secretions.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Once an individual has contracted the virus, he obtains lifelong immunity. Unexposed hosts and compromised individuals quite susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Unlikely to survive most conditions of a cooling device. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **CHROMOBLASTOMYCOSIS** |
| HUMAN | DISEASE OR EFFECT:<br>Chronic spreading lesions.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Requires direct contact penetrating an open wound. Primarily a tropical disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Unknown |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Not expected to cause problems in the U.S. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **CLADOSPORIUM spp.** | |
| HUMAN | DISEASE OR EFFECT:<br>May cause chromomycosis<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Very low susceptibility to this organism. |
| VEGETATION | DISEASE OR EFFECT:<br>Cladosporium bantianum and C. Carrionii are not pathogenic. Other species, C. Carpopnilum and C. Fulvum are pathogenic.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: CLAMYDIA TRACHOMATIS

**HUMAN**

DISEASE OR EFFECT: Trachoma - chronic destructive keratoconjunctivitis, inclusion conjunctivitis, occasional mild urethritis or cervicitis.

EPIDEMIOLOGICAL SIGNIFICANCE:
Relatively low communicability. Transmission requires either direct contact with materials or insects serving as carriers. Often transmitted through genital contact but outbreaks have been linked to contaminated swimming water.

HOST SENSITIVITY/SUSCEPTIBILITY:
Immunity is not well defined, especially for small innocula.

**VEGETATION**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**COMMENTS**

Low risk due to isolated geographical pockets of disease, its natural low communicability, and the required close contact.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **CLONORCHIS SINENSIS**

HUMAN

DISEASE OR EFFECT:
Clonorchiasis - a nematode disease of the bile ducts producing hepatic lesions.

EPIDEMIOLOGICAL SIGNIFICANCE:
Present in China, Korea and Japan. Not present in the U.S.

HOST SENSITIVITY/SUSCEPTIBILITY:

Universal susceptibility.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Not a problem in the U.S.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **CLOSTRIDIUM BOTULINUM** |
| HUMAN | DISEASE OR EFFECT:<br>Botulism - a life threatening interreaction characterized by failure of brain functions with cranial palsies and respiratory failure.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Related to inadequately prepared foods.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Universal susceptibility. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Symptoms of progressive paralysis in mammals. Poultry show signs of progressive weakness leading to paralysis and the characteristic limp neck. Wild birds become paralyzed.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Mammals ingest the toxin from another source and do not generate the toxin in their own intestine. Outbreaks in ducks common. Toxin is generated in stagnant pools and post mortem in infected birds. Outbreaks in ducks and pheasants and wild birds occur from these pools or cannibalism of dead birds.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Sporadic cases shown in herbivores. Minimum lethal dosage for cavies is .00012 mg/kg subcutaneoulsy. Waterfowl and pheasants are extremely susceptible. Scavenger (vultures, gulls, etc. ) develop immunity to toxin (Type E) . |
| COMMENTS | Conceivably the organism producing the toxin could be distributed more widely through cooling tower effluent creating a major hazard. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **CLOSTRIDIUM PERFINGES**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Food poisoning - characterized by abdominal cramps and diarrhea.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Worldwide distribution related to inadequate cooking practices creating anaerobic conditions. Living organisms necessary to produce disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Most individuals are probably susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Lamb dysentary kills lambs withing the first 2 weeks of life. Cause is an enteritis. Enterotoxemia affects adult sheep and organisms produce a toxin which is absorbed into the blood and markedly damages kidneys. Calves and pigs develop hemorrhegic enteritis. Poultry develop ulcerative necrotitic enteritis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Found in the alimentary tract of nearly all species of warm blooded animals. Enterotoxemia usually associated with a sudden change of diet.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Effects in poultry uncommon. Warm blooded animals very susceptible. |
| COMMENTS | Organism is found in soil. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

|  |  |
|---|---|
| NAME: CLOSTRIDIUM TETANI | |
| HUMAN | DISEASE OR EFFECT:<br>Tetanus: characterized by stiffness of the body, painful tonic spasms of voluntary muscles, exaggeration of reflex activity and generalized convulsions.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Would ordinarily require direct innoculation into tissue of open wound.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Many adults are immunized but many are either totally or partially unimmunized. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Spores may be quite hardy and ubiquity of the organism creates a potential for dissemination to open wounds. The risk remains less than that of natural exposure. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | COCCIDIOIDES IMMITIS |
| HUMAN | DISEASE OR EFFECT: Coccidioidomycosis: deep mycotic infection resembling tuberculosis. Impacts the central nervous system.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Usually found in semi-arid areas from California to West Texas. Usually carried by wind and dust storms.<br>HOST SENSITIVITY/SUSCEPTIBILITY: General susceptibility to primary infection. Recovery results in solid immunity. High rate of unapparent infection. Occurs 10x more often in Negroes and Filipinos than caucasians. |
| VEGETATION | DISEASE OR EFFECT: Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Coccidioidomycosis in large animals; a benign disease in cattle which produces granulomas in the lymph nodes of the chest. Sheep react similarly. Small animals develop granulomatous lesions primarily in the lung with other lesions especially in the bone. In wildlife, the disease is characterized by fungating lesions on the skin, multiple pulmonary cavities or nodules and spleenomegaly,<br>EPIDEMIOLOGICAL SIGNIFICANCE: With few exception, all cases have been originated in the inland valleys of California where it is contracted from dust infected with chlamydospores.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Small rodents, dogs and cattle seem most sensitive. |
| COMMENTS | Unlikely for spores to get into water supply but would create a major hazard if they did. |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: CONIDIOBOLUS CORONATUS | |
| HUMAN | DISEASE OR EFFECT:<br>Mucormycosis; evasive fungal infection particularly of the face, nasal sinuses and respiratory tract.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Worldwide occurance of the organism but infection is rare.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Infection occurs almost exclusively in diabetic or immunosuppressed individuals. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | If introduced into water system, it would create devasting conditions for elderly and compromised hosts in the area. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **CORYNEBACTERIUM spp.** | |
| HUMAN | DISEASE OR EFFECT: Acute bacterial conjunctivitis inflamation of conjunctiviae.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Epidemic in nature, widespread<br>HOST SENSITIVITY/SUSCEPTIBILITY: susceptibility decreases with age for bacterial infections, remains for viral. |
| VEGETATION | DISEASE OR EFFECT: The following cause rotting and lesions: C. agropyri, C. fascians, C. flaccumfaciens, C. humiferum, C. hypertrophicans, C. insidiosum, C. michiganense, C. oortli, C. pimpinellifolium, C. poinsettiae, C. rathayi, C. tritici.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Corynebacterium pyogenes has caused isolated cases in sheep.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Compromised hosts are most susceptible. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | CORYNEBACTERIUM DIPTHERIAE |
| HUMAN | DISEASE OR EFFECT:<br>Diptheria primarily of pharynx and exposed skin.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Communicable by contact with infected materials. Occasionally transmitted by unpasteurized milk.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Immunity through prior immunization. In U.S., large segments of the population remain unprotected. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | If an adequate supply existed and it survived the physical parameters, this would be of serious consequence. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **CORYNEBACTERIUM ULCERANS**

HUMAN

DISEASE OR EFFECT:
Diptheria, primarily of the pharnyx and exposed skin.

EPIDEMIOLOGICAL SIGNIFICANCE:
Communicable by contact with infected materials. Occasionally transmitted by unpasteurized milk.

HOST SENSITIVITY/SUSCEPTIBILITY:
Immunity through prior immunization. In U.S. large segments of the population remain unprotected.

VEGETATION

DISEASE OR EFFECT:
Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

If an adequate supply existed and it survived the physical parameters, this would be of serious consequence.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: COXSACKIE B VIRUS | |
| HUMAN | DISEASE OR EFFECT: Pleurodynia - acute viral disease with fever and chest pain.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Mode of transmission is not entirely clear but may involve both contact or ingestion via the fecal - anal route.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Probably generalized susceptibility. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | The risk rests on survival and delivery of the virus in significant numbers and is probably not great. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME **CRYPTOCOCCUS NEOFORMANS**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Cryptococcosis; systemic mycosis with major impact on lung and central nervous system.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Universally found in soil.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Man has an appreciable resistance unless unusally large innoculum is administered. Patients receiving therapy or with disorder of the reticuloendothelial system. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>In large mammals there have been outbreaks of mastitis with regional lymph node involvment. Dogs develop encephalitis or chronic respiratory disease. Nasal growths giving rise to chronic discharge.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>The organism is found living in pigeons as an endosaprophyte and exosaphophyte.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Dogs are most susceptible when compromised. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | DERMATOPHILUS CONGOLENSIS |
| HUMAN | DISEASE OR EFFECT:<br>Streptotrichosis<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Generally compromised individuals are the only susceptible hosts. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: In cattle, horses, sheep and goats, small confluent, raised and circumscribed crusts composed of epidermal cells and coagulated serous exudate with embedded hairs appear on the skin. It may be a local progressive or fatal disease. In wildlife lesions appear which are an exudative epidermitis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Biting insects are thought to be a vector<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>With only one exception, dermatophiliosis in deer has only be reported in New York State and its immediate vicinity. |
| COMMENTS | Dampness is thought to be a contributing factor. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: DIPHYLLOBOTH RIUM LATUM

**HUMAN**

DISEASE OR EFFECT: Diphylloboyhriasis/Anisakiasis - intestinal tapeworm. May produce disorders of the nervous and digestive systems. Malnutrition and anemia.

EPIDEMIOLOGICAL SIGNIFICANCE:

Endemic worldwide in temperate zones. Contracted by eating raw food. Infected fish found in the U.S. only in industrial lakes.

HOST SENSITIVITY/SUSCEPTIBILITY:

Universal susceptibility

**VEGETATION**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**COMMENTS**

Not a problem in the U.S.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **DRACONTIASIS** |
| HUMAN | DISEASE OR EFFECT:<br>An infection of the subcutaneous and deeper tissues with a large nematode.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>No human disease has been found in the U.S.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Universal susceptibility. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ECHINOCCUS GRANULOSUS**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Echinococcus granulosa - cystic disease of the liver and other organs.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>In U.S. restricted to Utah sheepraising areas.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Generalized susceptibility. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>When the ova are ingested, they develop into echinococcus cysts.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Animals may become an intermediate host.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Not a problem. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | ECHOVIRUS, COXSACKIE A & B, POLIO VIRUS |
| HUMAN | DISEASE OR EFFECT: Enterovirus disease - variety of clinical syndromes ranging from central nervous system disease to arterial/pulmonary disease to upper respiratory infections.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Transmitted via fecal oral route, persists in polluted waters and is a hardy virus.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Universal susceptibility. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Produces diabetic effects in 20-30% of rodents infected.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>These animals are rarely susceptible. |
| COMMENTS | If these viruses survive the conditions of the cooling device, they will present three of the major health risks related to cooling device effluent. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ENTAMEBA HISTOLYTICA**

HUMAN

DISEASE OR EFFECT:

Amebiasis - protozoan infection of the GI Tract and its accessory organs. Characterized by diarrhea, and when severe; by fever and chills. Secondary infection may abscess brain , liver or lungs.

EPIDEMIOLOGICAL SIGNIFICANCE:

A cosmopolitan infection particularly prevalent in areas with poor sanitation; expecially in tropical area.

HOST SENSITIVITY/SUSCEPTIBILITY:

General susceptibility although there is a relatively high unapparent infection rate.

VEGETATION

DISEASE OR EFFECT:

Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

Reported in dogs, characterized by a yellow, foamy, mucoid diarrhea.

EPIDEMIOLOGICAL SIGNIFICANCE:

Organism may be issolated from healthy animals.

HOST SENSITIVITY/SUSCEPTIBILITY:

Frequently susceptible

COMMENTS

Potentially important, expecially in the southern half of the country.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ENTEROBACTERIACEAE**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Epidemic keratoconjunctivitis; acute conjunctivitis and intraoccular infections; bacterial pneumonia.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Eye infections require direct contact; Pneumonia is often contracted by aspiration of throat flora .<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Hosts are very susceptible - Bacterial pneumonias have marked age distributions in host's sensitivities. |
| VEGETATION | DISEASE OR EFFECT:<br>Erwinia spp. cause necroses, galls and wilts on plants. At least 29 species listed as pathogens of plants. Most common is E. corotovora which causes soft rot of roots and fruits.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Not all tribes are pathogenic. |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>These have been isolated as normal inhabitants of the intestinal tract and sometimes respiratory and urogenital tract of all animal species.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Conditions under which these become parasitic and produce disease depend upon the individual strain and species of bacteria and individual host response. |
| COMMENTS | Eye infections are not a major risk because they require direct contact and are only sporadically distributed. In general direct dissemination is not a major risk. Indirect consequences include small systemic changes in human skin, pharyngeal or stool flora resulting from inhaled or ingested gram negative bacilli. These changes would be most noticeable among compromised hosts, eg. hospital patients. Dispersion in this type of setting would be catastrophic. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ENTEROBIASIS**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Benign intestinal disease usually associated with anal itching.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Widespread in the U.S. Fecal - oral mode of transmission.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Universal susceptibility |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ENTEROPATHOGENIC E. COLI**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Diarrhea<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>A major cause of nursery, institutional, and travellers diarrhea.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Infants and travellers to new environments most susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Can cause coli bacellosis of foals (enteric disease), Pyometra and osteomyelitis in dogs and cats, wound abscessation in cats and a variety of disease in poultry (Hjarre's Disease, coigranuloma, omphalitis). Associated with fatal metritis and peritonitus in gray squirrels, diarrhea in calves.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Has been isolated in healthy individuals.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Susceptibility varies. |
| COMMENTS | Fecal contamination of water presents probability of infection in conjunction with cooling tower effluent. Potentially a major hazard. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **FASCIOLOPSIASIS** |
| HUMAN | DISEASE OR EFFECT:<br>Fasciolopsiasis - a nematode disease of the small intestine particularly the duodenum.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Widely distributed in the Orient.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Universal susceptibility. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | FUSCOBACTERIUM spp. |
| HUMAN | DISEASE OR EFFECT:<br>May cause pneumonia; local lung tissue may become necrotic and abscessed.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>This organism will most likely cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Many hosts are susceptible to this disease. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | This organism if found in aerosol drift would cause serious public health problems. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **VIRAL GASTROENTERITIS** | |
| HUMAN | DISEASE OR EFFECT:<br>**Nausea, vomiting, diarrhea**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>**Worldwide distribution, probably transmitted through fecal-oral transmission. May occur in epidemic fashion (Norwalk Agent).**<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>**Widespread susceptibility, particularly in young children.** |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | **Potentially a major hazard.** |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: GEOTRICIUM CANDIDIUM | |
| HUMAN | DISEASE OR EFFECT:<br>May cause geotrichosis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>The organism rarely causes disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Hosts are very rarely susceptible to this disease. Only compromised individuals should contract this disease. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | This organism is unlikely to cause public health problems. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **GIARDIA** | |
| HUMAN | DISEASE OR EFFECT: Protozoan infection of the small bowel<br>EPIDEMIOLOGICAL SIGNIFICANCE: Worldwide significance. Most cases relate to fecal contamination of water supplies.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Asymptomatic disease quite common |
| VEGETATION | DISEASE OR EFFECT: Not pathogenic to plant.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Potentially a major hazard. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: HAEMOPHILUS AEGYPTIUS | |
| HUMAN | DISEASE OR EFFECT:<br>Causes acute or subacute infectious conjunctivitis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>It is not likely to cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Compromised hosts are susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | The organism should not be a major concern to the public in general but to compromised hosts it may cause concern. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: HAEMOPHILUS INFLUENZA | |
| HUMAN | DISEASE OR EFFECT: Viral respiratory infection<br>EPIDEMIOLOGICAL SIGNIFICANCE: Universal distribution. As new strains appear, epidemics occur. Transmitted from human to human via airborne and droplet contract route.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Due to frequent changes in viral antigenicity make nearly all ages susceptible to any major new strain. Particularly susceptible are elderly, and individuals with respiratory infections. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Parainfluenza coupled with one or more bacteria species causes infectious tracheitis in dogs, characterized with a moist cough. Newcastle disease of poultry occurs in four clinical forms generally characterized by respiratory and neurological nature.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Highly infectious diseases. Newcastle is of supreme importance to poultry industry.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Infectious tracheitis is highly contagious by droplet infection. Newcastle disease is lightly infectious, spread by droplet, feces, decaying carcasses drying or fermenting matter. |
| COMMENTS | These strains are unlikely to get into the water systems which serves the cooling towers. However, if found in make up water, this would present a serious risk to populations over long distances from the cooling device. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **HEPATITIS A, B, VIRAL** |
| HUMAN | DISEASE OR EFFECT: Produces inflamation of the liver.<br>EPIDEMIOLOGICAL SIGNIFICANCE: "A" is usually transmitted by ingestion and "B" by direct contact with blood or blood products. Viral hepatitis is relatively resistent to many environmental conditions.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Most of the adult population does not have prior resistence. Immunity is obtained after primary infection. |
| VEGETATION | DISEASE OR EFFECT: Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Although close contact is usually required, the stability of the agent and its ubiquity make this an agent of considerable risk. |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **HERPANGINA** | |
| HUMAN | DISEASE OR EFFECT: Acute fever and pharyngitis.<br>EPIDEMIOLOGICAL SIGNIFICANCE: An epidemic disease, summer and fall, in temperate climates.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Extent and duration of natural immunity unknown. Close contact generally required. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Survival of agent and nature is unclear. Close contact generally required makes widespread aerosolization unlikely. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **HERPES SIMPLEX** | |
| HUMAN | DISEASE OR EFFECT: Viral infection with local infections at many sites, especially the eye, mouth and perineum, systemic infection occasionally resulting in encephalitis.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Persistent and recurrent infection is common. Direct contact can result in cross-reinfection.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Most adults have acquired antibody LHSV-1. It is unclear what the role of prior infection plays in immunity. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Role of epidemic waves and host susceptibility are inadequately understood, but it is unlikely to a risk. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **HISTOPLASMA CAPSULATUM**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT: Histoplasmosis; Systemic mycosis resembling tuberculosis in its clinical manifestations.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Usually transmitted through inhalation of airborne spores in dust. Prevalent in eastern and central United States.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Widespread susceptibility but following primary infection individuals retain immunity to reinfection. |
| VEGETATION | DISEASE OR EFFECT: Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Histoplasmosis is a mycotic disease primarily involving the reticuloendothelial system. It may be acute, subacute, or chronic localized or disseminated. In dogs chronic debilitating digestive disturbance with enlarged, abdomen, hepatomegaly and ascites; respiratory tract infection in rodents.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Transmission is usually via contaminated soil containing high amounts of organic matter. (eg. soil of chicken houses and yards located in endemic regions).<br>HOST SENSITIVITY/SUSCEPTIBILITY: Birds are resistant. Dogs can transmit the disease through the saliva, vomitus, feces or urine. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **KLEBSIELLA PNEUMONIAE**

**HUMAN**

DISEASE OR EFFECT:

Bacterial pneumonia

EPIDEMIOLOGICAL SIGNIFICANCE:

Many of these are acquired by aspiration of the throat flora. Contact or person to person transmission of pneumococci is quite common.

HOST SENSITIVITY/SUSCEPTIBILITY:

All ages are susceptible to pneumococcal. Other bacterial penumonias have more marked age distributions.

**VEGETATION**

DISEASE OR EFFECT:

Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:

Klebsiella sp. can cause severe metritis in mares and mastitis in cattle. Reported septicemia in moose. Respiratory infections in primates.

EPIDEMIOLOGICAL SIGNIFICANCE:

Found in respiratory, intestinal and urogenital tracts of animals.

HOST SENSITIVITY/SUSCEPTIBILITY:

Susceptibility varies

**COMMENTS**

Risk of direct dissemination is small. Indirect consequences may include small systematic changes in human skin, pharyngeal or stool flora resulting from inhaled and ingested gram negative bacilli. Such changes may be manifest only in a few, especially susceptible, hosts even those in hospitals. Might be catastrophic in those settings and such changes might become apparent in those setting.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **LASA VIRUS , MARBURG VIRUS** |
| HUMAN | DISEASE OR EFFECT:<br>Lasa Fever, Marburg virus disease severely acute systemic febrile illness.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Currently limited to local outbreaks in Africa.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Probably universally susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Severity of this disease makes this significant were it to become disseminated here, but this is unlikely. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **LEGIONNER'S DISEASE** | |
| HUMAN | DISEASE OR EFFECT:<br>**Legionner's Disease, systemic illness or pneumonia**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>**Source and mode of spread unknown and epidemic potential has been demonstrated.**<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>**Susceptibility and predisposition factors are unknown.** |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | **Should be considered a significant risk until more is known about the stability and transmissivility of the organism.** |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **LEPTOSPINA INTERROGANS**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Leptospirosis - systemic fibrile disease with many varied manifestations.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Transmitted via contact with water, vegetation and similar natural sources. Found most often in rural and animal areas.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Widespread susceptibility. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Worldwide prevalence of these organisms, of many serotypes in natural waters and in rural settings, and the risk of infection from contact or ingestion makes this a realistic hazard. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: LISTERIA MONOCYTOGENES

HUMAN

DISEASE OR EFFECT:
Listeria - usually an acute meningo-encephalitis; occasionally can cause systemic illness in newbornes, abortions.

EPIDEMIOLOGICAL SIGNIFICANCE:
Universal pathogen, epidemiology is poorly understood.

HOST SENSITIVITY/SUSCEPTIBILITY:
Newbornes, infants and debilitated adults most susceptible.

VEGETATION

DISEASE OR EFFECT:
Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT: In small rodents produces focal liver necrosis, necrotic areas in myocardium and meningitis. Usually causes encephalitis in cattle and sheep although it has been associated with neonatal septicemia in calves and valvular endocarditis in sheep. In swine, focal liver necrosis and peritonitis. Affects wildlife similarly to cattle.

EPIDEMIOLOGICAL SIGNIFICANCE:
Organism has been isolated from multiple species. Nasal route is port of entry into mammals.

HOST SENSITIVITY/SUSCEPTIBILITY:
Young swine more commonly affected than old. Cattle are most susceptible and the source is the ensilage fed to the cattle.

COMMENTS

Unlikely to be a problem.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **LYMPHOCYTIC CHORIOMENINGITIS** |
| HUMAN | DISEASE OR EFFECT:<br>Viral infection producing an influenza like and/or meningoencephalitis syndrome.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Maintained in small rodents, particularly guinea pigs, hamsters and the house mouse. Occasionally transmitted by fomites either directly or via an aerosol to man.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Unclear how susceptible man is to this agent. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Quite conceivable that this agent would get into the water supply and then be aerosolized. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **LYMPHOGRANULOMA VENERUM** |
| HUMAN | DISEASE OR EFFECT:<br>Venerally acquired systemic disease<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Widespread in venereal epidemiologic cycles but transmissible by indirect contact with contaminated articles<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Unknown susceptibility. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | It is probably insignificant. Accessibility of this organism to non-veneral sites is unclear. |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **MEASLES**

HUMAN

DISEASE OR EFFECT: Acute systemic viral infection particularly affecting skin, respiratory tract, mucusal surfaces and central nervous system

EPIDEMIOLOGICAL SIGNIFICANCE:

Universally found, it is spread by droplet or direct contact. Sometimes presents significant morbidity and mortality.

HOST SENSITIVITY/SUSCEPTIBILITY:

Hosts are universally susceptible and retain lifelong immunity after contracting natural measles.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

If viable organisms can be found in the effluent.
This has enormous potential for epidemic dissimination.

PATHOGEN

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **MENINGOCOCCAL INFECTION**

HUMAN

DISEASE OR EFFECT:

Meningitis and septicemia

EPIDEMIOLOGICAL SIGNIFICANCE:

Common and serious epidemic and endemic disease, spread by contact with droplets and discharge organism is quite labile to environmental conditions.

HOST SENSITIVITY/SUSCEPTIBILITY:

High ratio of unapparent to apparent cases under natural conditions, and a high proportion of carriers.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Susceptibility of the organisms to environmental change is well known, and it is doubted that it would survive in drift conditions. This is the only thing which would preclude this from major consideration.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | MOLLUSCUM CONTAGIUM |
| HUMAN | DISEASE OR EFFECT:<br>Papular viral disease of the skin.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Generally transmitted by direct contact. Though contact from fomites have been proven possible.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Probably requires control which is too direct allowing too large an innocullum to be important. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **MONONUCLEOSIS**

HUMAN

DISEASE OR EFFECT:

Systemic viral disease with lymphadenopathy.

EPIDEMIOLOGICAL SIGNIFICANCE:

Usually transmitted by close person to person contact.

HOST SENSITIVITY/SUSCEPTIBILITY:

Clinical disease more common in children and young adults. Older adults may be immune due to prior infection. Specific predisposition is unknown.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Under natural conditions, remote transmission via airborne or droplet is unlikely.

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | MUCOR spp. |
| HUMAN | DISEASE OR EFFECT:<br>See specific species.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>Mucor piriformis causes rot in stores apples. Mucor saprophytic molds on stored food.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Mucor spp. causes lesions in rodents and mucor rhizopodiformis is associated with abortion in cattle.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Found isolated in birds and turtles. Mucor rhizopodiformis is found isolated from fetal membranes.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Generally low susceptibility. Compromised hosts are more susceptible. |
| COMMENTS | |

PATHOGEN

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | MUCOR PUSILLUS |
| HUMAN | DISEASE OR EFFECT: Mucormycosis; evasive fungal infection particularly of the face, nasal sinuses, and respiratory tract.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Worldwide occurance of the organism but infection is rare.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Infection occurs almost exclusively in diabetic or immunosuppressed individuals. |
| VEGETATION | DISEASE OR EFFECT: Forms mold on stored food.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Saprophytic<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | If introduced into the water system, it would create devastating conditions for elderly and compromised individuals in the area. |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **MUCOR RAMOSISSIMUS**

**HUMAN**

DISEASE OR EFFECT:

Mucormycosis; evasive fungal infection particularly of the face, nasal sinuses and respiratory tract.

EPIDEMIOLOGICAL SIGNIFICANCE:

Worldwide occurances of the organism but infection is rare.

HOST SENSITIVITY/SUSCEPTIBILITY:

Infection occurs almost exclusively in diabetic or immunosuppressed individuals.

**VEGETATION**

DISEASE OR EFFECT:

Forms molds on stored foods.

EPIDEMIOLOGICAL SIGNIFICANCE:

Saprophytic

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**COMMENTS**

If introduced into the water system, it would create devastating conditions for elderly and compromised hosts in the area.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **MUMPS** |
| HUMAN | DISEASE OR EFFECT:<br>**Mumps - fever and parotitis (or other salivary glands)**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>**In childhood, transmitted by contact and droplet. Not as explosively epidemic as other childhood viral diseases.**<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>**Susceptibility prior to infection is universal. After infection lifelong immunity is universal.** |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | **If it could survive cooling device conditions, it represents less of an epidemic hazard than other childhood diseases.** |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **MYCOBACTERIUM spp.**

HUMAN

DISEASE OR EFFECT:

May cause mycobacteriosis

EPIDEMIOLOGICAL SIGNIFICANCE:

These organisms may remain viable in soil.

HOST SENSITIVITY/SUSCEPTIBILITY:
Few hosts are susceptible and will contract the disease.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

If this should be found in cooling tower drift, would cause public health problems, especially for compromised hosts.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **MYCOBACTERIUM TUBERCULOSIS**

HUMAN

DISEASE OR EFFECT:
**Tuberculosis, systemic subacute - chronic disease with major impact on lungs; bacterial pneumonia**

EPIDEMIOLOGICAL SIGNIFICANCE:
**Worldwide distribution, transmitted via aerosols. Pneumonia usually transmitted through contact or aspiration of throat flora.**

HOST SENSITIVITY/SUSCEPTIBILITY:
**General susceptibility particularly in debilitated populations. Susceptibility for pneumonia has a marked age distribution.**

VEGETATION

DISEASE OR EFFECT:
**Not pathogenic to plants.**

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

**Of major importance, increasing incidence of tuberculosis. Direct contamination leading to pneumonia is not a major risk. Indirect consequences may include systematic changes in human skin, pharyngeal or stool flora, resulting from inhaled and ingested gram negative bacilli. Such changes will manifest themselves in few hosts and usually in compromised individuals. This could be a major risk to areas with hospitals. Found in soil.**

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **NOCARDIA ASTEROIDES** |
| HUMAN | DISEASE OR EFFECT: Nocardiosis; subacute - chronic systemic infection with particular impact on the lungs. Mycoplasma pneumonia<br>EPIDEMIOLOGICAL SIGNIFICANCE: Worldwide distribution; found in soil causing sporadic disease, particularly in the compromised host. Penumonia acquired in family units and school through droplet and contact transmission.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Suspected to be relatively low in an uncompromised hosts but susceptibility is unconfirmed. High rate of unapparent pneumonia infections indicating relative resistance to normal innoculation. |
| VEGETATION | DISEASE OR EFFECT: Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Causes mastitis in goats. Nocardiosis in dogs is a suppuractive pluritis. A similar condition has been found in cats.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Isolated in cattle from abscesses in the udder. Transmission by inhalation suspected.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Possible complicating factor in susceptibility such as canine distemper. |
| COMMENTS | Large innocula could become aerosolized and widespread disease could occur. Actual risk to normal host is unknown. For the impaired host, this will certainly be a risk of Nocardiosis, and risk magnitude is expected to increase with increasing contamination of the effluent. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **NOCARDIA BRASILIENSIS**

HUMAN

DISEASE OR EFFECT:

Nocardiosis:, subacute - chronic systemic infection with particular impact on the lungs. Mycoplasma pneumonia.

EPIDEMIOLOGICAL SIGNIFICANCE:

Worldwide distribution in soil causing sporadic disease, particularly in compromised host. Pneumonia acquired through droplet or direct contact.

HOST SENSITIVITY/SUSCEPTIBILITY:

Suspected to be relatively low in an uncompromised host but susceptibility is unconfirmed. High rate of unapparent infection of pneumonia indicates relative resistance to usual innocula.

VEGETATION

DISEASE OR EFFECT:

Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Large innocula could become aerosolized and widespread disease could occur. Actual risk to normal host is unknown. Risk is significant for impaired hosts and the risk increases with increasing contamination of the effluent.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **NOCARDIA CAVIAE**

HUMAN

DISEASE OR EFFECT: Nocardiosis, subacute - chronic systemic infection with particular impact on lungs. Mycoplasma pneumonia.

EPIDEMIOLOGICAL SIGNIFICANCE: Worldwide distribution in soil causing sporadic disease particularly in compromised host. Pneumonia may be caused by droplet or direct contact, frequently in schools or family units.

HOST SENSITIVITY/SUSCEPTIBILITY: Suspected to be relatively low in an uncompromised host but susceptiblity is unconfirmed. High rate of unapparent infections represents a relative resistance to the usual innocula.

VEGETATION

DISEASE OR EFFECT:

Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Large innocula could become aerosolized and widespread disease could occur. Actual risk to a normal host is unknown. Risk is significant for impaired hosts and this risk increases with increasing contamination of the effluent.

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **PARAGONIMUS spp.** | |
| HUMAN | DISEASE OR EFFECT:<br>Paragonimasis - lung fluke disease<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Restricted to Far East, Africa and South America.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Generally susceptible hosts. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Not a problem in the U.S. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: PEPTOCOCCUS spp.

**HUMAN**

DISEASE OR EFFECT:
May cause pneumonia; local lung tissue becomes necrotic and abscessed.

EPIDEMIOLOGICAL SIGNIFICANCE:

These organisms are likely to cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY:

Many hosts are susceptible and readily contract this disease.

**VEGETATION**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**COMMENTS**

These organisms may present significant risks to public health if found in aerosol drift.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **PEPTOSTREPTOCOCCUS** spp. |
| HUMAN | DISEASE OR EFFECT:<br>These organisms may cuase pneumonia, local lung tissue may become necrotic or abscessed.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>The organisms are quite infectious and hardy.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Many hosts are susceptible and are likely to contract this disease. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | The organisms, if found in aerosol drift, will constitute a significant risk to public health. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **PHIALOPHORA spp.**

HUMAN

DISEASE OR EFFECT:

These organisms would cause chromomycosis.

EPIDEMIOLOGICAL SIGNIFICANCE:

These organisms survive well in sludge, sewage and waste stabilization ponds. Generally, it is unlikely for these organisms to cause disease.

HOST SENSITIVITY/SUSCEPTIBILITY:

Few hosts are susceptible.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

This organism presents little cause for concern for public health.

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **POLIOMYELITIS VIRUS** | |
| HUMAN | DISEASE OR EFFECT: Paliomyelitis - acute viral illness characterized by upper respiratory and gastrointestinal symptoms ranging to severe paralytic disease or death.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Widespread epidemic potential principally by droplet or direct contact.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Very high unapparent to apparent infection rate. Disease can be severe even in normal hosts who are uniformly susceptible. Large areas of the U.S. are inadequately immunized. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Vaccine type poliovirus have been found in U.S. water supplies, although this is not the traditional source of epidemics. But if make-up water were contaminated, the risk would be significant even though the dissemination of the virus is unknown. |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | PROTEUS MIRABILIS |
| HUMAN | DISEASE OR EFFECT: May cause enterocolotitis<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: General susceptibility |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Associated with chronic, antibiotic resistant infections of the skin of small animals and cetacea. Also in cystitis of small animals.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Found isolated in reptiles.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **PROTOTHECA spp.** |
| HUMAN | DISEASE OR EFFECT:<br>Protothecosis<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>These organisms rarely cause disease.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Hosts are rarely susceptible, occasionally compromised hosts are susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | If these organisms should be found in aerosol drift, it is unlikely that they would create a public health risk. |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **PSEUDOMONAS AERUGINOSA** |
| HUMAN | DISEASE OR EFFECT: Acute bacterial conjunctivitis; inflamation of conjunctivae; epidemic keratoconjunctivitis.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Epidemic in nature, widespread occurances. Contract through direct contact.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Susceptibility decreases with age for bacterial infections, remains the same for viral. Compromised hosts most susceptible. |
| VEGETATION | DISEASE OR EFFECT: May be a low grade pathogen<br>EPIDEMIOLOGICAL SIGNIFICANCE: Salad crops may harbor the pathogen and infect other hosts.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: May cause necrotic pneumonia in swine; enteritis in calves; resistant skin infections in small animals, particularly otitis externa; outbreaks in poults; dermatitis in cetacea and meningitis in rodents.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Comparatively low virulence. |
| COMMENTS | Not likely to be a risk because of the required close contact and sporadic distribution. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **PSEUDOMONAS MALLEI**

HUMAN

DISEASE OR EFFECT:

Glanders, a cutaneous disease characterized by caseating lesions resulting in ulcerations.

EPIDEMIOLOGICAL SIGNIFICANCE:

The infection may be contracted from infected horses and donkeys.

HOST SENSITIVITY/SUSCEPTIBILITY:

Most hosts are very susceptible to secondary infection.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

Glanders and farcy in horses and donkeys and cattle. Symptoms are chronic and untimately fatal. Glanders characterized by ceseating nodular lesions that break down and form ulcers.

EPIDEMIOLOGICAL SIGNIFICANCE:

The disease is easily contracted and highly contagious. The infection may be passed on to humans.

HOST SENSITIVITY/SUSCEPTIBILITY:

Many hosts are susceptible.

COMMENTS

This organism would present significant risks should it become aerosolized. Definite impact would become apparent in agricultural or animal-husbandry areas.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **PSEUDOMONAS PSEUDOMALLEI**

HUMAN

DISEASE OR EFFECT: Melioidesis; Pneumonia or Septicemia

EPIDEMIOLOGICAL SIGNIFICANCE: Uncommon disease requiring close natural contact with soil or water. Person to person transmission very uncommon.

HOST SENSITIVITY/SUSCEPTIBILITY: In natural conditions many asymptomatic cases; clinical disease is more apparent in persons with an injury or antecedent disease.

VEGETATION

DISEASE OR EFFECT: Not pathogenic to plants

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Until a natural locus is found in the U.S., this should not be a hazard in this country. Risk of pneumonia through direct dissemination is small. Indirect consequences may include small systematic changes in human skin, pharyngeal or stool flora resulting from inhaled and ingested gram negative baccilli. These changes aren't often apparent and usually show in compromised hosts. This would be a major risk near hospitals.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: PSITTACOSIS | |
| HUMAN | DISEASE OR EFFECT: Acute generalized infectious disease particularly impacting the lungs.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Usually related to exposure to infected birds or their droppings.<br>HOST SENSITIVITY/SUSCEPTIBILITY: General for all populations |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Unlikely to be transmitted through water used in cooling device, small risk. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **RABIES** | |
| HUMAN | DISEASE OR EFFECT: Viral encephalitis<br>EPIDEMIOLOGICAL SIGNIFICANCE: Although is's usually transmitted via bite of infected animals, aerosol transmission under special conditions near Texas bat caves has been demonstrated.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Universal. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Unlikely to become a risk unless some source of the virus nearby has been disturbed. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **RHINOCLADIELLA spp.** |
| HUMAN | DISEASE OR EFFECT:<br>Causes chromomycosis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>The disease is rarely contracted.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Few hosts are susceptible to this disease. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | These organisms present little cause for concern for the public health. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: RHIZOPUS ARRHIZUS

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT: Mucormycosis; evasive fungal infection particularly of the face, nasal sinuses and respiratory tract.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Worldwide occurance of the organism but infection is rare.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Infection occurs almost exclusively in diabetic or immunosuppressed individuals. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants. R. stolonifer and R. nigricans are common saprobes and facultative parasite of mature fruits and vegetables.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>RHIZOPUS sp. has been isolated in rodents and birds.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Low level of susceptibility. |
| COMMENTS | If introduced into water system, it would create devastating conditions for elderly and compromised hosts in the area. |

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | RHIZOPUS ORYZAE |
| HUMAN | DISEASE OR EFFECT: Mucormycosis; an evasive fungal infection particularly of the face, nasal sinuses, and respiratory tract.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Worldwide occurance of the organism but infection is rare.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Infection occurs almost exclusively in diabetic or immunosuppressed individuals. |
| VEGETATION | DISEASE OR EFFECT: Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | If introduced into water system, it would create devastating conditions for elderly and compromised hosts in the area. |

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: RICKETTSIA BURNETII | |
| HUMAN | DISEASE OR EFFECT: Q Fever an acute reckettsial infection with particular impact on lungs and liver.<br>EPIDEMIOLOGICAL SIGNIFICANCE: A hardy disease often disseminated in dust contaminated by infected anal tissues.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Populations are generally susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Could result in high risk for populations proximate to cooling towers adjacent to agricultural - animal husbandry areas or animal processing plants. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: RUBELLA | |
| HUMAN | DISEASE OR EFFECT: Rubella - a systemic, dermal, viral disease; may produce congenital malformation.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Transmitted by droplet contact and airborne routes causing periodic epidemic outbreaks.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Widespread susceptibility. Pregnant women represent the highest risk group due to risk to fetus. Immunization in progress but susceptibles still available. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | If the organism survives aerosolization, this is a hazard because of potential malformation of embryos and fetuses. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | SALMONELLA TYPHI, SALMONELLA PARATHPHI A, B & C |
| HUMAN | DISEASE OR EFFECT: Four forms of infections: gastroenteritis, enteric fever, sustained bacteremia, carrier state.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Worldwide significance as a human infection. Over 1500 serotypes of salmonella exist.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Generally susceptible hosts, particularly the debilated. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Disease may have clinical manifestations characteristic to allow identification of disease or may only indicate infection. Infections are septicemic in nature and characterized by weakness, recumbency and fever. Pregnant animals may abort. Diarrhea is common. Brain symptons, convulsions may be observed in calves, blindness in chicks.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Outbreaks more common in young and mortality exceeds that of adults.<br>HOST SENSITIVITY/SUSCEPTIBILITY: In animals it usually causes a septocemia as well as gastroenteritis. Asymptomatic carriers can occur. The main carriers are fowl, swine and dogs. |
| COMMENTS | If salmonella survive the physical conditions, this could be an important problem Approximately $10^7$ organisms are required to produce disease in 50% of the individuals |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | SHIGELLA sp. |
| HUMAN | DISEASE OR EFFECT: Acute bacillary dysentery<br>EPIDEMIOLOGICAL SIGNIFICANCE: Worldwide relating to poor sanitation. Fecal-oral route of transmission. Tiny innoculum required, <100 organisms. Very hardy, persistent organisms.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Universal susceptibility. |
| VEGETATION | DISEASE OR EFFECT: Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Has to be a major concern. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **SMALL POX**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT: Smallpox - systemic, very serious, viral disease, characteristic rash.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Highly communicable disease easily spread by contact or airborne route. Virus is stable in environmental exposures, allowing secondary cases to appear indirectly.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Most are immunized but many people in the U.S. have "lapsed" vaccinations, allowing some return of susceptibility. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | This is not now a hazard but only on geographical grounds. Barring a catastrophe in the lab or in the deterioration of the current strain found in Ethiopia, this should not produce a hazard simply because of the absence of the virus. |

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | SPOROTHRIX SCHENCKII |
| HUMAN | DISEASE OR EFFECT:<br>May cause sporotrichosis or streptotrichosis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>This organism is not highly infectious.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Some hosts are susceptible to this organism, but generally they are compromised, if susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | This organism is unlikely to cause public health problems if found in aerosol drift. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | STAPHLOCOCCUS AUREUS |
| HUMAN | DISEASE OR EFFECT:<br>Aucte bacterial conjunctivitis; inflammation of conjunctivae, epidemic keratoconjunctivitis; bacterial pneumonia.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Eye infections are epidemic in nature, widespread occurance and usually transmitted through direct contact with contaminated material. Contact also common in Transmission of pneumonia.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Susceptibility decreases with age for bacterial infections. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: In horses, pyogenic infections often associated with other organisms. Botryomycosis - an infection of a surgical wound following castration is due to this organism. In cattle, small animals and wildlife, mastitis and other suppurative infections.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Birds are highly resistant, usually but not always associated with other organisms. |
| COMMENTS | Sporadic distribution and required close contact make this a low risk for eye infections. Indirect consequences include small systematic changes in human skin, pharyngeal or stool flora resulting from inhaled and ingested gram negative baccili. These changes will manifest themselves in only a few susceptible hosts. This could be catastrophic in settings near hospitals and those changes would become apparent there. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **STAPHYLOCOCCUS spp.** | |
| HUMAN | DISEASE OR EFFECT: Staphylococcol food poisoning - characterized by nausea and vomiting<br>EPIDEMIOLOGICAL SIGNIFICANCE: Certain strains produce a toxin which is ingested and produce the disease. Toxin is quite resistant to extreme physical conditions. The toxin producing strains are found worldwide.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Universal susceptibility |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Risk in minimal since toxin producing strains shouldn't be entering make-up water. However, the toxin itself could survive and be widely distributed producing disease. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **STAPHYLOCCUS spp.** | |
| HUMAN | DISEASE OR EFFECT:<br>Staphylococcal Disease - large variety from skin infections to pneumonia with widespread systemic invasion.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Often find auto-innoculation resulting from small pools of organisms from external sources. Major pathogen worldwide.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Local host defenses adequately protect normal individuals but person with impaired local or systemic host defenses are at a special risk. Hosts are universally susceptible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | These organisms provide a potential secondary hazard. These hazards include becoming innoculated into the nasal flora, residing there without effect but causing secondary disease in other sites of some individuals. Should the organisms get into the water supply or survive physical conditions present, there would be the risk of these secondary effects. Staphylococcus spp. is an important human pathogen. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: STREPTOCOCCUS spp.

HUMAN

DISEASE OR EFFECT: Streptococcal diseases - a variety of disease especially skin the pharyngeal infections, some causing serious secondary effects of Rheumatic fever or glomerulonephritis.

EPIDEMIOLOGICAL SIGNIFICANCE: Transmission by direct contact and rarely airborne. Outbreaks following contamination of food or milk have been demonstrated.

HOST SENSITIVITY/SUSCEPTIBILITY: Wide susceptibility to tissue infection.

VEGETATION

DISEASE OR EFFECT: Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT: Streptococcus agalactiae causes a large occurance of chronic catarehal mastitis in dairy cattle.

EPIDEMIOLOGICAL SIGNIFICANCE: Transmission occurs by direct contact from contaminated milking machines or hands of milkers.

HOST SENSITIVITY/SUSCEPTIBILITY: Compromised hosts are most susceptible although widespread among cattle.

COMMENTS

Moderate epidemic potential if the organism survives. Transmitted by three routes;direct infection colonization with subsequent secondary infection or via non-suppurative secondary effects of the heart or kidneys.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: TAENIASIS | |
| HUMAN | DISEASE OR EFFECT:<br>Taeniasis - beef and pork tapeworm disease.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Fecal - oral route of transmission. Rare in the U.S.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Universally susceptible hosts. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Unlikely to be a problem. |

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **TOGAVIRUS (CHIKUNGUNYA, DENGUE,YELLOW FEVER)** | |
| HUMAN | DISEASE OR EFFECT: Hemorrhagic fevers - acute hemorrhagic, systemic illness of presumed viral etiology.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Mode of transmission unknown. Found in Russia and Southeast Asia.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Most host are generally suscetible. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Not a problem in the United States. |

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: TORULOPSIS GLABRATA

HUMAN

DISEASE OR EFFECT:

Causes meningitis.

EPIDEMIOLOGICAL SIGNIFICANCE:

It is unlikely that this organism will cause this disease.

HOST SENSITIVITY/SUSCEPTIBILITY:

Hosts are rarely susceptible. Compromised hosts generally contract the disease.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

This organism should not create a public health hazard except possibly to compromised hosts.

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: TOXOPLASMA GONDII | |
| HUMAN | DISEASE OR EFFECT:<br>Toxoplasmosis - systemic protozoan infection<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Worldwide distribution related to animal fecal contamination. Disease is often unapparent in hosts.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>General susceptibility, particularly immunosuppressed hosts. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Unknown risk. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: TRICHIVELLA SPRIALIS

HUMAN

DISEASE OR EFFECT:

Trichinosis - generalized muscle disease due to larvae.

EPIDEMIOLOGICAL SIGNIFICANCE:

Worldwide; related to ingestion of inadequately cooked pork, beans and other wild animals.

HOST SENSITIVITY/SUSCEPTIBILITY:

Universal.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Not a problem related to cooling device effluent.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: TRICHOMONAS | |
| HUMAN | DISEASE OR EFFECT:<br>Trichmoniasis - a chronic protozoam genito - urinary disease.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Worldwide<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Universal, but disease occurs mainly in the female. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Not a problem relating to cooling device drift. |

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: VERRUCA VULGARIS | |
| HUMAN | DISEASE OR EFFECT:<br>Verruca Vulgaris - warts<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Usually transmitted only by direct contact with infected material or individual.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Protective and immune characteristic, not known. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | Absence of aerosol or droplet spread under natural conditions makes this unlikely to be a hazard of aerosolization. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **VIBRIO CHOLERAE**

**HUMAN**

DISEASE OR EFFECT:
Cholera - acute disease

EPIDEMIOLOGICAL SIGNIFICANCE:
Major problem in the Middle East, Africa, India, Pakistan & Asia. Not a present problem in the U.S.

HOST SENSITIVITY/SUSCEPTIBILITY:
Universaly susceptibility

**VEGETATION**

DISEASE OR EFFECT:
Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**COMMENTS**

Presently not a problem in the U.S. If it got into the water supply, it would present a major risk.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **VIBRIO PARAHAEMOLYTICUS**

HUMAN

DISEASE OR EFFECT:
Acute food poisoning characterized by diarrhea, cramps & fever

EPIDEMIOLOGICAL SIGNIFICANCE:
Related to ingestion of raw seafood in coastal areas.

HOST SENSITIVITY/SUSCEPTIBILITY:
Probably universal susceptibility.

VEGETATION

DISEASE OR EFFECT:
Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:
Vibrio sp. can cause cecum lesions in rabbits.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:
Compromised hosts are most susceptible

COMMENTS

Unlikely to be a problem.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME:

HUMAN

DISEASE OR EFFECT:
Viral respiratory diseases from the "common cold" to pharyngitis.

EPIDEMIOLOGICAL SIGNIFICANCE:
Spread by contact or droplet or indirectly through infected articles. Epidemic potential depends on specific agent involved.

HOST SENSITIVITY/SUSCEPTIBILITY:
All hosts are universally susceptible.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **YERSINA PESTIS**

HUMAN

DISEASE OR EFFECT: Plague; systemic bacterial infection with particular impact on reticulo-endothelial system & lungs. Bacterial pneumonia.

EPIDEMIOLOGICAL SIGNIFICANCE: Wild rodents are a nautral reservoir of plague within infected fleas the means of transmission. Pneumonia may be contracted by aspiration of throat flora or direct contact.

HOST SENSITIVITY/SUSCEPTIBILITY: Hosts are generally susceptible. Hosts showed marked age distribution in susceptibility to bacterial pneumonia.

VEGETATION

DISEASE OR EFFECT: Not pathogenic to plants.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT: Causes sylvatic plague which is characterized by enlarged spleen, necrotic foci of the spleen, liver and lungs and presence of buboes. Been found in ground squirrels, wood rats, prairie dogs, chipmunks, marmots,. deer, mice and vole.

EPIDEMIOLOGICAL SIGNIFICANCE: Organism persists indefinately once infected. Organism remains viable in soil for many months.

HOST SENSITIVITY/SUSCEPTIBILITY: Variability in susceptibility among co-existing species as well as individuals within species. Mostly found in Western U.S. Dense population of rodents combined with a high incidence of heavy flea infestation are predisposing factors.

COMMENTS

Unlikely to be in the water supply but if it did, it would be a lethal risk in increasing incidence of Tuberculosis. Pneumonia is a risk to compromised hosts due to its indirect effects of small systemic changes in human skin, pharyngeal and stool flora after inhalation and ingestion of gram negative bacilli.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **YERSINA PSEUDOTUBERCULOSIS** |
| HUMAN | DISEASE OR EFFECT:<br>May cause enterocololitis<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>General susceptibility of the entire population. |
| VEGETATION | DISEASE OR EFFECT:<br>Not pathogenic to plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT: Most frequently occurs in colonies of guinea pigs who sicken, develop diarrhea, lose weight and die in 3-4 weeks. Also can occur in white rats. Reported in a wide variety of artiodactyes, carnivores, marsupials, insectivores and primatés; regional lymphadenitis involving visceral organs; also granulomatour lesions.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Transmitted via fecal oral route.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Wildlife are generally asymptomatic. Occurs only under conditions of captivity. |
| COMMENTS | |

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ZYGOMYCETES**

HUMAN

DISEASE OR EFFECT:

Epidemic keratoconjunctivitis

EPIDEMIOLOGICAL SIGNIFICANCE:

Usually transmitted through direct contact with contaminated materials.

HOST SENSITIVITY/SUSCEPTIBILITY:

Compromised hosts are most susceptible. May become immune to one strain but it's common for new strains to develop.

VEGETATION

DISEASE OR EFFECT:

Mostly saprobes on plants but occasional weak parasites (eg. Mucor piriformis on stored apples.)

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

Sporadic distribtuion and required close contact make eye infections a low risk in cooling tower environment.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: ACENAPHTHENE

HUMAN

DISEASE OR EFFECT:

**Neoplastic effects**

EPIDEMIOLOGICAL SIGNIFICANCE:

**Suspected carcinogen**

HOST SENSITIVITY/SUSCEPTIBILITY:

**Lowest toxic dose shown when applied to skin of mouse was 600 gm/kg.**

VEGETATION

DISEASE OR EFFECT:

**Mutations: induces ployploidy in same manner as colchichine.**

EPIDEMIOLOGICAL SIGNIFICANCE:

**Unknown**

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ACETONE**

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>May cause headache, fatigue, excitement, bronchial irritation and possibly narcosis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Serious poisoning is rare.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hour exposure to 1,000 ppm in air or 2400 $mg/m^3$ in water. |
| VEGETATION | DISEASE OR EFFECT:<br>Commonly used to formulate pesticides for application to plants because of its low phytotoxicity.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Low significance unless present in large quantities.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>In small animals acute effects. May produce vomiting, diarrhea and depressed pulse, respiration and blood pressure.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Introduced through inhalation or ingestion.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Effects are nontransmittable or allergic responses. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ACROLEIN**

HUMAN

DISEASE OR EFFECT:
Skin and mucus irritant. Vapors cause lacrimation. Asthma reported.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

VEGETATION

DISEASE OR EFFECT:
Used as herbicide molluscide and slimicide in open recirculation cooling towers. 1.5-7.5 ppm killed Cladophora, Elodea, Spriogyra, Collitrichi, Ceratrphyllum, Potamogeton, Zannichellia and Hydrodictyon.

EPIDEMIOLOGICAL SIGNIFICANCE:

Unknown

HOST SENSITIVITY/SUSCEPTIBILITY:
Normal dose range as a slimicide if 0.2 - 1.0 ppm. Highly effective at low doses.

ANIMAL

DISEASE OR EFFECT:
Lethal to experimental mice.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

$LD_{50}$ subcutaneously in mice is 30 mg/kg.

COMMENTS

Could be associated with death or reduced growth of aquatic and terrestial flora if used an an algacide or slimicide. Use as an algacide and slimcide would tend to increase in a closed cooling system. If aerosolized this would be quite significant to proximate flora.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: ACRYLONITRILE | |
| HUMAN | DISEASE OR EFFECT:<br>Cyanide effects.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Extremely toxic.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hour exposure at 20 ppm in air or 45 $mg/m^3$ in water. |
| VEGETATION | DISEASE OR EFFECT:<br>Toxic to foliage of vegetables.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Unknown<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Unknown |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **ALDRIN**

HUMAN

DISEASE OR EFFECT: Renal damage, ataxia, convulsions followed by CNS depression, respiratory failure, death. Chronic exposure may cause hepatic damage.

EPIDEMIOLOGICAL SIGNIFICANCE: Suspected carcinogen. Poisoning by ingestion, inhalation, skin absorption.

HOST SENSITIVITY/SUSCEPTIBILITY:

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT: Acute effects found in birds through survey; decreased reproductivity, thin eggshells, depressed growth rate. Small, large and wild animals react with tremors, spasms, convulsions. Acute lack of oxygen in system, difficulty breathing.

EPIDEMIOLOGICAL SIGNIFICANCE: High response rate producing acute effects at low concentrations. Higher concentrations results in death in small and large domestic and wild animals.

HOST SENSITIVITY/SUSCEPTIBILITY: Ingestion or topical absorption produces toxicity. Low level chronic exposure results in storage in adipose tissues and non-transmitable allergic responses. Higher concentrations culminate in high death rate. Application of dilute solution to oral lesions resulted in death of 105 out of 107 lambs.

COMMENTS

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: ANTIMONY AND COMPOUNDS

HUMAN

DISEASE OR EFFECT: Causes dermatitis, peratitis, conjunctivitis and nasal septal ulceration.

EPIDEMIOLOGICAL SIGNIFICANCE:

Infection by contact, fumes or dust.

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.5 $mg/m_3$.

VEGETATION

DISEASE OR EFFECT: Medium toxicity for plants and low potential for aquatic organisms. Exact response unknown.

EPIDEMIOLOGICAL SIGNIFICANCE:

Has a high "enrichment factor" in emissions (elemental composition of airborne particles relative to elemental concentrations in crustal material).

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

Lethal to experimental rats.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

$LD_{50}$ in rats was 100mg/kg in an aqueous suscension.

COMMENTS

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: ARSENIC & COMPOUNDS

HUMAN

DISEASE OR EFFECT:
Acute effects after ingestion includes nausea, vomiting, diarrhea. Chronic effects includes exfoilation and pigmentation of skin, herpes, polyneuritis, degeneration of liver and kidney.

EPIDEMIOLOGICAL SIGNIFICANCE:

Highly toxic

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.5 $mg/M^3$.

VEGETATION

DISEASE OR EFFECT:
Highly toxic to bees and destructs beehives proximate to the airborne source. Accumulates in roots of plants. Concentrations in soil arrests seed germination. Toxic symptons include foliar necrosis, retarded growth, yield reduction.

EPIDEMIOLOGICAL SIGNIFICANCE:
May be passed on to herbivores. Slows germination due to bee loss. May produce potentially hazardous bioaccumulation in aquatic systems.

HOST SENSITIVITY/SUSCEPTIBILITY:
Older leaves more susceptible than young. Normal concentration in leaf tissues range from <0.1 - 10 ppm. Generally, higher in roots. Some concentrations found in soil 500-5,000 ppm. but rarely higher than 30 ppm. Snap and lima beans, peas, cucumbers, alfalfa most sensitive.

ANIMAL

DISEASE OR EFFECT:
In small animals emesis, weakness, bloody diarrhea, cyanosis and weak pulse, culminating in shock; collapse; and coma. In large animals, similar effects as well as ataxia and blindness, ulceration of mucous membranes, higher incidence of abortion and still births.

EPIDEMIOLOGICAL SIGNIFICANCE:
Toxic through ingestion or percutaneous absorption. A tissue poison that combines with and inactivates sufhydryl groups in tissue enzymes. Mortality rate is very high.

HOST SENSITIVITY/SUSCEPTIBILITY:
Doses range from 50-100 mg of sodium arsenite, 6.5 mg/kg for horses, 7.5 mg/kg for cattle, sheep 11 mg/kg and 2 mg/kg for pigs.

COMMENTS

A significant toxin due to potential bioaccumulation in aquatic systems, reduced germination, legume sensitivity, extreme toxicity to humans and raised incidence of abortion and still births in stock.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | ASBESTOS |
| HUMAN | DISEASE OR EFFECT:<br>Prolonged exposure to dust can result in pulmonary fibrosis (asbestosis), emphysema, lung neoplasms.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Suspected carcinogen.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>$TC_{LO}$ inhaled by humans 1.2 fibers/cc. |
| VEGETATION | DISEASE OR EFFECT:<br>Possible accumaltion on plant surfaces. Potential effects is only on man or animals after ingestion of plants coated.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>None<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>None |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Suspected carcinogen<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>$TC_{LO}$ when inhaled by experimental rats was 12 $mg/M^3$. |
| COMMENTS | |

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **BENZENE**

HUMAN

DISEASE OR EFFECT:

Acute effects include irritation of mucous membranes, restlessness, convulsions, depressions. Death may follow respiratory failure. Chronic effects include bone marrow depression and aplasia.

EPIDEMIOLOGICAL SIGNIFICANCE:

Suspected carcinogen. May be absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to concentrations greater than 25 ppm. $TC_{LO}$ inhaled is 210 ppm.

VEGETATION

DISEASE OR EFFECT:

Lethal to foliage.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Benzene may be found in plant biosynthesis.

ANIMAL

DISEASE OR EFFECT:

Acute affects in small animals; conjunctivitis, nausea and vomiting, depression, cyanosis, weak pulse, depression and ataxia. Extreme reaction culminates in convulsions and coma.

EPIDEMIOLOGICAL SIGNIFICANCE:

Toxic by inhalation and ingestion.

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **BENZIDINE**

**HUMAN**

DISEASE OR EFFECT:

May produce vomiting, nausea, liver and kidney damage. May cause injury to blood vessels and bladder; tumors.

EPIDEMIOLOGICAL SIGNIFICANCE:

Suspected carcinogen. Rapidly absorbed throught the skin.

HOST SENSITIVITY/SUSCEPTIBILITY:

$TC_{Lo}$ inhaled is $18mg/_{M3}$.

**VEGETATION**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

Suspected carcinogen. Rapidly absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY:

LD orally in dogs if 400 mg/kg; in mice 214 mg/kg.

**COMMENTS**

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **BERYLLIUM & COMPOUNDS**

HUMAN

DISEASE OR EFFECT: Contact dermatitis, chemical conjunctivitis, corneal burns, non-healing ulceration at site of injury, subcutaneous nodules. Pneumonitis may result from single exposure. Pulmonary granulomatous disease 3 mo. - 15 yrs. later.

EPIDEMIOLOGICAL SIGNIFICANCE:

Occasionally fatal. Suspected carcinogen. Single exposure may precipitate effects. Effects may appear years later.

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 2 mg/M$^3$ . Do not expose to concentrations of 5 ug/M$^3$. TC$_{LO}$ inhaled is 300 mg/M$^3$. Exposure to acid fumes may increase toxic effects.

VEGETATION

DISEASE OR EFFECT:

Low concentrations stimulate growth. High concentrations are toxic, inhibit many enzymes of phosphorus metabolism; accumulates in roots.

EPIDEMIOLOGICAL SIGNIFICANCE:

**Plants transfer** Be to animals and humans. Less potential toxicity to plants than to man and animals.

HOST SENSITIVITY/SUSCEPTIBILITY:

Toxicity occurs at <2ppm in nutrient medium. Be is very soluble and increases with higher acidity. As long as the roots are active, plants remain sensitive throughout their life cycle. General repression of growth in tomatoes, lettuce and green peas.

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: BIPHENYL

HUMAN

DISEASE OR EFFECT:
Can cause central nervous system depression, paralysis, convulsions.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:
Do not exceed 8 hour exposure to 0.2 ppm or 1 $mg/M^3$.

VEGETATION

DISEASE OR EFFECT:
Probably accumulated in plants.

EPIDEMIOLOGICAL SIGNIFICANCE:
Used frequently as a fungicide.

HOST SENSITIVITY/SUSCEPTIBILITY:
Tolerance in citrus is 110ppm.

ANIMAL

DISEASE OR EFFECT:
In rabbits and rodents lowers disease resistance.

EPIDEMIOLOGICAL SIGNIFICANCE:
Heightens susceptibility to other pathogens and toxins.

HOST SENSITIVITY/SUSCEPTIBILITY:
Low concentrations are metabolized. High concentrations (>10ppm) are toxic. $LD_{50}$ in rats is 2.2g/kg.

COMMENTS

Significant should it become aerosolized due to probably accumulation in plants and tendency to lower disease resistance in small mammals.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **CADMIUM**

**HUMAN**

DISEASE OR EFFECT: Ingestion causes choking, vomiting, abdominal pain, diarrhea, tenesmus. Inhalation causes cough, headache, vomiting , chest pain, pneumonitis, bronchopneumonia.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.2 mg/M$^3$ dust, 0.1 mg/M$^3$ fume. Do not exceed exposure to >0.6 mg/M$^3$ dust or >3 mg/M$^3$ fume. TD$_{LO}$ inhaled is 88 mg/M$^3$.

**VEGETATION**

DISEASE OR EFFECT:

Reduced growth, vigor, yield and quality. Excess Cd induces Fe deficiency symptoms. Geochemically related to Zn.

EPIDEMIOLOGICAL SIGNIFICANCE:

Plants may act as a vector to other bioforms; herbivores are also accumulators. Potentially hazardous concentration in aquatic systems.

HOST SENSITIVITY/SUSCEPTIBILITY:

Toxicity due to replacement of Zn in certain enzymes. Increase in soil pH reduces Cd intake by radishes. As Cd concentration rises, increase in soil content and reduces yield. (Reduction at level as low as 2.5 ppm. Leaves of soybean more sensitive than stems or roots.)

**ANIMAL**

DISEASE OR EFFECT:

Squirrels - renal damage. In other rodents increases retention of other metals, alters DNA synthesis, lowers disease resistance. In toads, evidence of decreasing primary spermatogenesis.

EPIDEMIOLOGICAL SIGNIFICANCE:

Possible mutation of future generations. Increased susceptibility to other pathogens and toxins.

HOST SENSITIVITY/SUSCEPTIBILITY:

Unlikely to cause effects at low concentrations except compromised rodents. Possible to cause effectsat high concentrations and very likely for rodents.

**COMMENTS**

Significant when amounts from industrial source is already present in water to be used for cooling.
May be accumulated in aquatic systems and herbivores. Plants act as a vector.
Reduces disease resistance in animals.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: CARBON TETRACHLORIDE

**HUMAN**

DISEASE OR EFFECT: Acute effects include nausea, vomitting, diarrhea, headache, stupor, renal damage anuria, azotemia, liver damage. Chronic effects include liver damage, kidney injury, and visual distrubances.

EPIDEMIOLOGICAL SIGNIFICANCE:
Suspected carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY:
$TC_{LO}$ inhaled is 20 ppm, affecting the central nervous system.

**VEGETATION**

DISEASE OR EFFECT:
Exempt from FDA tolerance levels when used as a post-harvest fumigant on grains.

EPIDEMIOLOGICAL SIGNIFICANCE:
Used as an additive to fumigants to reduce flammability or hazard from explosion.

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:
In small animals, nausea, delirium, acute hepatic failure, collapse, coma, death. In large animals, staggering, progressive narcosis, collapse, death. Toxic hepatitis and respiratory depression.

EPIDEMIOLOGICAL SIGNIFICANCE:
Toxicity through ingestion or inhalation. Has produced carcinogenic effects in experimental mice.

HOST SENSITIVITY/SUSCEPTIBILITY:
Sheep can withstand 1-3 ml. doses monthly with no adverse effect. Cattle are more susceptible than sheep. LC for mice was 1000 ppm in air. $TD_{LO}$ orally in mice is 120/mg/kg.

**COMMENTS**

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **CHLORDANE**

**HUMAN**

DISEASE OR EFFECT:
Acute posioning, degradation of the liver.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.5 $mg/M^3$ in water.

**VEGETATION**

DISEASE OR EFFECT: Bioaccumulation in plants. Phytotoxicity is not an important factor. Concentrated in algae and to lesser degree by vascular plants. Penetrates leaf surface readily and is quite stable.

EPIDEMIOLOGICAL SIGNIFICANCE:

Persistant in soil. Plant could be effective means of bioaccumulation and vehicle for passage to other biota. 2-4 year half-life in soil.

HOST SENSITIVITY/SUSCEPTIBILITY:

80% conversion to other products in cabbage after 10 weeks.

**ANIMAL**

DISEASE OR EFFECT: Restlessness, fasciculations, muscle spasms, convulsions, fever, cyanosis depression, frenzied movement, increased frequency of micturation, coma, and death.

EPIDEMIOLOGICAL SIGNIFICANCE:
After chronic low level exposure, chlordane can be stored in adipose tissue. Released in wild aminals during stress or starvation yielding acute toxicity. In scavengers and birds, leads to decreased hatchability of eggs and increased chick mortality.

HOST SENSITIVITY/SUSCEPTIBILITY:
Reported poisioning in dogs, cats, lambs and cattle. Cats most sensitive. Acute poisoning leading to death more common in small animals than large. In experimental rats, $LD_{50}$ was 457-590 mg/kg.

**COMMENTS**

Significant if aerosolized due to its persistance in soil and bioaccumulation in vegetation and animal tissue, and delayed toxicity in animals.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | CHLORINATED BENZENES |
| HUMAN | DISEASE OR EFFECT: Low systemic toxicity. Mild skin irritation on prolonged contact.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours exposure to 75 ppm, or 350 mg/M$^3$. |
| VEGETATION | DISEASE OR EFFECT: Hexachlorobenzene is used as a fungicide.<br>EPIDEMIOLOGICAL SIGNIFICANCE: No evidence of breakdown on plants or in soil.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Persistant and stable. |
| ANIMAL | DISEASE OR EFFECT: No direct effects noted.<br>EPIDEMIOLOGICAL SIGNIFICANCE: USDA has detected hexachlorobenzene in body fat of domestic animals and poultry in 14 states.<br>HOST SENSITIVITY/SUSCEPTIBILITY: EPA established interim tolerance of 0.5 ppm in fat of cattle, sheep, goats and horses. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **CHLORINATED ETHYLENES** |
| HUMAN | DISEASE OR EFFECT:<br>**May produce effects resembling intoxication; narcotic effects; death.**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>**Effects result from inhalation.**<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>**Do not exceed 8 hours exposure to 100 ppm, or concentrations greater than 200 ppm in air.** |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **CHLORINATED NAPTHALENE** | |
| HUMAN | DISEASE OR EFFECT:<br>Causes nausea, vomiting, headache, anaphoresis, hematuria, hemolytic anemia, fever, hepatic necrosis, convulsions, coma.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Poisoning by inhalation, ingestion or skin absorption.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Death in laboratory animals.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>$LD_{50}$ in rats ranged from 1540 mg/kg to 2078 mg/kg. In mice the $LD_{50}$ ranged from 886-1091 mg/kg. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

|  |  |
|---|---|
| NAME: | CHLORINE/CHLORIDE |
| HUMAN | DISEASE OR EFFECT:<br>Powerful irritant which may cause fatal pulmonary edema.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 1 ppm or 3 mg/$M^3$, 4 ppm in air may be detected by smell, 30 ppm will cause coughing. |
| VEGETATION | DISEASE OR EFFECT:<br>Acute effects are foliar injury. Chronic exposure can result in decreased growth and mortality of plants. HCl and $SO_2$ shown to be synergistic in phytotoxin action.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Mean concentration of Cl - normally found in dry weight of foliage is 57% is a range of 0.1 to 1.0% chronic effects most likely achieved with Cl salts. Relative to $SO_2$; HCl is less toxic, $Cl_2$ about equal in toxicity. |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS |  |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **CHLOROFORM** |
| HUMAN | DISEASE OR EFFECT:<br>Hypotension, respiratory and myocardial depression, death.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Suspected carcinogen.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not expose to concentration of 150 ppm in air or 240 mg/M$^3$. TD$_{LO}$ inhaled is 10 ppm. |
| VEGETATION | DISEASE OR EFFECT:<br>Alters respiratory activity of tissue - similar to anaerobiosio. Kills leaves at higher concentrations. Possibly an accumulator.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Exempt from tolerance level (FDA) when used as a post-harvest fumigant on grain. May act as a vector to herbivores.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Probably no tolerance. TD$_{LO}$ in experimental mice is 18 g/kg. |
| ANIMAL | DISEASE OR EFFECT:<br>Prolonged administration has produced severe heart, kidney and especially liver damage. Can produce early heart failure or cardiac depression. Burns if left in contact with skin.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Has been administered as an anesthetic.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Maximum allowable concentration for prolonged period 100 ppm. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: 2-CHLOROPHENOL

HUMAN

DISEASE OR EFFECT: Increase then decrease in respiration rate, blood pressure, urinary output; fever; increased bowel action; motor weakness, collapse with convulsions and death. Lung, liver and kidney damage. Contact dermatitis.

EPIDEMIOLOGICAL SIGNIFICANCE:
May be absorbed through the skin. Suspected carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY:

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:
Toxic to experimental laboratory mice.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

$TD_{LO}$ on the skin of mice is 6000 mg/kg

COMMENTS

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: CHROMIUM & COMPOUNDS

HUMAN

DISEASE OR EFFECT:

From dermal contact primary irritation ulceration. allergic eczema, After inhalation nasal irritation, septal perforation, bronchogenic carcinoma. Ingestion causes G.I. irritation and renal injury.

EPIDEMIOLOGICAL SIGNIFICANCE:

Suspected carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.5 mg/M$^3$ solution of chronic and chromous salts, or 1 mg/M$^3$ metal and insoluable salts. Do not expose to concentrations >1mg/10M$^3$ chronic acid and chromates.

VEGETATION

DISEASE OR EFFECT:

Damage to vegetation as soluable inorganic salts produce reduced growth, yield, quality. Not essential to plant life. Cr in soil responsible for "yellow branch" in citrus. May act as sinks for Cr concentration. Induces iron deficiency.

EPIDEMIOLOGICAL SIGNIFICANCE:

May act as vector and transfer to other biota. May produce potentially hazardous bioaccumulation in aquatic systems.

HOST SENSITIVITY/SUSCEPTIBILITY:

Chromates toxic to plants: Dichromates more toxic. High potential for toxicity to plants. Concentration found higher in roots than leaves. Host soils contain 5-3000 ppm. Range of 0.01 to 1.0 ppm found in leaves of 25 families (dry weight). Legumes to eat contain 0.03 to 0.05 ppm.

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | COPPER |
| HUMAN | DISEASE OR EFFECT:<br>Irritation to skin and mucus membranes. May cause metal fume fever.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 0.1 mg/$M^3$ copper fume or 1 mg/$M^3$ dusts or mist. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>May act as bioaccumulators, and vectors to other animals.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Acute effects - gastroenteritis with symptomatic blue or green colored feces and vomitus. Death from shock after 24 hours. Chronic effects; anorexia, thirst, hemoglobinuria, iceterus, and death 24-48 after appearance of signs.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Toxic through ingestion directly or through plants which have absorbed the metal from contaminated soil.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Doses greater than 250 ppm in feed is toxic to pigs. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **CYANIDE** |
| HUMAN | DISEASE OR EFFECT:<br>Acute effect from high concentration may be death due to respiratory arrest. Chronic effects are fatigue and weakness.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 5 $mg/M^3$ average fatal dose is 50-60 mg. |
| VEGETATION | DISEASE OR EFFECT: Metabolic poison inhibits metalloenzymes expecially in iron containing enzymes. High concentration damages vegetation and uptake was reported in fruits and leaves for 1-3 days following exposure.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Injury from airborne cyanide out-of-doors is highly improbable. Is found naturally in combined form as glycocides in members of rose and crucifer families. |
| ANIMAL | DISEASE OR EFFECT:<br>Small animals lapse into coma. Larger react with dyspnea, restlessness, recumbency and clonic convulsions with opisthotonus, death in 1-2 hours.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Minimal lethal dose for hydrocyanic acid in cattle and sheep is 2 mg/lb. Plant material containing more than 200 ppm is likely to be toxic. |
| COMMENTS | |

TOXIN

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: DDT and METABOLITES

**HUMAN**

DISEASE OR EFFECT:
Acute effect is death. Chronic efforts include hepatic damage, central nervous system digeneration, agranulocytosis.

EPIDEMIOLOGICAL SIGNIFICANCE:
Suspected carcinogen. Readily absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY:
Do not exceed 8 hours exposure to 1 mg/M$^3$. $TD_{LO}$ orally is 16 mg/kg.

**VEGETATION**

DISEASE OR EFFECT: DDT can be translocated from treated to untreated part of the plant. It is taken up by marine algae and other small food chain organisms. Phytotoxicity in itself is not important.

EPIDEMIOLOGICAL SIGNIFICANCE:
DDT has a long residual life. Greatest accumulation is in organisms with smallest cell size. May accumulate up to 100,000 fold compared with concentration in water.

HOST SENSITIVITY/SUSCEPTIBILITY:
Most DDT applied to cabbage foliage was recovered after 14 weeks, about 75% had penetrated the plant. Plants concentrate DDT in germ of seeds and seed of wheat.

**ANIMAL**

DISEASE OR EFFECT:
In small animals reactions of extensor rigidity followed by convulsions and tremors. Larger domestic animals become increasingly excitable, experience weakness, tremors, terminal convulsions, premature births. Wild animals experience acute toxicity after concentrations are released from fat during stress of starvation. In birds, thinning eggshells, feather loss.

EPIDEMIOLOGICAL SIGNIFICANCE:
Predators acquire higher levels and carnivores accumulate and concentrate in adipose tissue. Alters susceptibility to viral infection. Manifests in morphological deformities and reproductive failure. DDT can reduce species diversity.

HOST SENSITIVITY/SUSCEPTIBILITY:
At lower concentrations, most mammals and rodents are susceptible if compromised. High susceptibility among animals at high concentrations >10ppm. In herring gulls 21 ppm reduced reproductivity. A single oral dose of 200 ppm is toxic to large animals.

**COMMENTS**

May be passed on in food chain resulting in higher concentrations.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: DIABYL ETHERS

HUMAN

DISEASE OR EFFECT:
Neoplastic effects.

EPIDEMIOLOGICAL SIGNIFICANCE:
Suspected carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY:
Do not be exposed to concentrations greater than 0.5 ppm. in air (diglycidyl); do not exceed 8 hrs. exposure to 50 ppm(butyl glycidyl).

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

COMMENTS

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **DICHLOROBENZENE** | |
| HUMAN | DISEASE OR EFFECT:<br>**Acute doses cause central nervous system depression. Chronic doses cause liver and kidney damage.**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>**Suspected carcinogen.**<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>**Do not exceed exposure to concentrations above 50 ppm in air or 300 $mg/M^3$ in water.** |
| VEGETATION | DISEASE OR EFFECT:<br>**Possibly accumulates in the plant. Has been used for borer control in peach trees and as soil treatment for termites.**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>**Effects found in small animals; head shaking, salivation, prostration and death.**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>**Onset of signs within minutes of oral absorption, death within 15-20 minutes.**<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>**Extremely high sensitivity. $LD_{50}$ orally in experimental mice is 950 mg/kg.** |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **DICHLOROBENZIDINE** | |
| HUMAN | DISEASE OR EFFECT:<br>**May cause allergic skin reactions.**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>**Suspected carcinogen.**<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>**Lethal to experimental laboratory animals.**<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>**$LD_{Lo}$ orally in rats 4740 mg/kg.** |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| | NAME: **DICHLOROETHYLENE** |
| HUMAN | DISEASE OR EFFECT:<br>Irritating to skin, mucus membranes, narcotic in high concentrations.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed exposure to 100 ppm or 400 mg/M$^3$ . |
| VEGETATION | DISEASE OR EFFECT:<br>Toxic to foliage.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Unknown.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Unknown. |
| ANIMAL | DISEASE OR EFFECT:<br>Has caused liver damage and kidney injury in experimental animals.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: DICHLOROPROPANES /DICHLOROPROPENE

**HUMAN**

DISEASE OR EFFECT:

Irritating to mucus membranes.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hour exposure to 75 ppm in air or 350 mg/$M^3$.

**VEGETATION**

DISEASE OR EFFECT:

Probably accumulated in tissues. Used as a soil treatment for nematodes.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

No tolerances get for chlorinated $C_3$ hydrocarbons or 1,3 dichloropropene; 5 ppm for 1,2 dibromo - 3 chloropropane .

**ANIMAL**

DISEASE OR EFFECT:

Liver and kidney injury produced in experimental animals.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**COMMENTS**

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **DIELDRIN**

**HUMAN**

DISEASE OR EFFECT:

Acute dose results in death. Chronic effects are hepatic damage, central nervous system degeneration, agranulocytosis.

EPIDEMIOLOGICAL SIGNIFICANCE:

Suspected carcinogen. Readily absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY:

$LD_{LO}$ orally in humans is 28 mg/kg.

**VEGETATION**

DISEASE OR EFFECT: Possible bioaccumulation in plants and persistant in soils. Translocated within plants. Plant tissues convert aldrin to dieldrin and other metabollic reactions can occur. Once in plant, it is persistant.

EPIDEMIOLOGICAL SIGNIFICANCE:

Doesn't seem to concentrate in carrot roots, potato tubers, wheat leaves or alfalfa.

HOST SENSITIVITY/SUSCEPTIBILITY:

Unknown, but phytotoxicity is not an important factor.

**ANIMAL**

DISEASE OR EFFECT:

Effects found through survey in birds. Other effects found in mink, snakes, amphibians and earthworms include spasms, convulsions, cyanosis, depression, frenzied movements, death, morphological deformities.

EPIDEMIOLOGICAL SIGNIFICANCE:

Has been shown to accumulate in adipose tissues of wildlife, yielding acute toxicity when animal is under stress over hatchability of eggs and increased chick mortality.

HOST SENSITIVITY/SUSCEPTIBILITY:

Poisioning reported in dogs, cats, lambs, calves and steers. $LD_{50}$ orally in rats is 87 mg/kg.

**COMMENTS**

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | 2,4,DIMETHYL PHENOL |
| HUMAN | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Suspected carcinogen.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Lethal to experimental laboratory animals.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Suspected carcinogen.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>On skin of a mouse $LD_{50}$ is 5600 mg/kg, administered internally $LD_{LO}$ is 150 mg/kg. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: 2.6 DINITROTOLUENE

HUMAN

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:
Readily absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY:
Do not exceed 8 hr. exposure to 1.5 mg/M$^3$.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:
Lethal to experimental laboratory animals.

EPIDEMIOLOGICAL SIGNIFICANCE:
Readily absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY:
$LD_{50}$ orally in rats is 177 mg/kg. $LD_{50}$ orally in mice is 1000 mg/kg.

COMMENTS

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: DIPHENYLHYDRAZINE

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Suspected carcinogen.<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Lethal to laboratory animals.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Suspected carcinogen.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>$Ld_{50}$ orally in rats if 30 mg/kg. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: ENDOSULFAN | |
| HUMAN | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Lethal to laboratory animals and small birds.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Poisoning through ingestion.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>$LD_{50}$ orally in rats 28 mg/kg; in ducks 34 mg/kg; in wild birds 35 mg/kg. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: ENDRIN | |
| HUMAN | DISEASE OR EFFECT:<br>Acute effect is respiratory failure. Chronic effect is hepatic damage.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 0.1 mg/$M^3$. |
| VEGETATION | DISEASE OR EFFECT:<br>Bioaccumulation in plants and persistant in soil. Formed in plants from isodrin. Endrin converts to keto-endrin which is more persistant. Products of endrin metabolism are translocated to soil.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Would pose as significant vectors to herbivores.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Absorbed by algae and vascular plants from aquatic media. With isodrine, has half-life of 4-8 years. Exact sensitivity unknown. |
| ANIMAL | DISEASE OR EFFECT:<br>Found through survey in birds with no attributable effects. Larger animals experience excitability and irritability, muscle tumors, weakness, paralysis, terminal convulsions. Chronic poisoning resulting in liver damage.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Animals are highly sensitive to prolonged exposure. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **HALOETHER AND HALOMETHANE**

HUMAN

DISEASE OR EFFECT:

Narcotic in high concentrations, fatal pulmonary edema. Injury to liver, kidney and central nervous system may occur.

EPIDEMIOLOGICAL SIGNIFICANCE:

Suspected carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed exposure to 100 ppm in air or 250 mg/M$^3$ (Nitromethane). Do not expose to concentrations >5 ppm in air or 240 mg/M$^3$ (Trichloromethane).

VEGETATION

DISEASE OR EFFECT:

Haloether is phytotoxic. Halomethane is used as a fumigant for insects on nursery stock or for vegetable products, grains and tubers.

EPIDEMIOLOGICAL SIGNIFICANCE:

Probably an bioaccumulator.

HOST SENSITIVITY/SUSCEPTIBILITY:

Exact response to Haloether is unknown. FDA tolerance to Halomethane is 50 ppm.

ANIMAL

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

$LD_{LO}$ on skin of experimental rats is 800 mg/kg.

COMMENTS

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **HEPTACHLOR**

HUMAN

DISEASE OR EFFECT:

Acute dose leads to death and chronic doses to hepatic damage.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.5 mg/M$^3$,serious effects occur at 1-3 g. Poisoning is more serious to hosts with liver disease.

VEGETATION

DISEASE OR EFFECT:

Phytotoxicity is not an important factor. Absorbed by plants and found as an epoxide. Potential vehicle for transfer to other biota.

EPIDEMIOLOGICAL SIGNIFICANCE:

Penetrates cabbage leaf readily and only 5% found after 5 weeks showing extensive metabolism and dissipation.

HOST SENSITIVITY/SUSCEPTIBILITY:

Has 7-12 year half-life when worked into the soil, less if applied to soil surface.

ANIMAL

DISEASE OR EFFECT:

Fasiculations, muscle spasms, convulsions and fever, followed by cyanosis, depression, coma and death in smaller animals. Larger animals react with dyspnea, tetany, excitability, paralysis, convulsions and death.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Highly sensitive to prolonged or high concentrations. Has been found in bird tissue with no attributable effects.

COMMENTS

Potential effects on fauna not flora.

TOXIN

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **HEXACHLORO - 1,3 - BUTADIENE** | |
| HUMAN | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Lethal to experimental animals<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Orally in rats $LD_{LO}$ is 300 mg/kg; administered internally in mice $LD_{50}$ is 32 mg/kg. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **ISOPHORONE** | |
| HUMAN | DISEASE OR EFFECT:<br>Vapors have narcotic properties<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 25 ppm in air or 140 mg/$M^3$ in water. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: LEAD

**HUMAN**

DISEASE OR EFFECT:
Acute dose may produce permanent brain damage. Chronic dose produces anemia.

EPIDEMIOLOGICAL SIGNIFICANCE:

Suspected carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.2 mg/M$^3$.

**VEGETATION**

DISEASE OR EFFECT:
Injury in nature not shown but has been induced experimentally. When induced toxicity resembles "frenching". May produce bioaccumulation in aquatic systems.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Content of leaves is normally less than 10 ppm.

**ANIMAL**

DISEASE OR EFFECT: Vomitting, diarrhea, anorexia, anemia, hemoglobinuria, hysteria, listlessness, blindness, convulsions, coma, tremors, collapse and tonic-clonic convulsions until death especially in large domestic animals.

EPIDEMIOLOGICAL SIGNIFICANCE:
Decreases enzyme activity, impairs aviary reproduction. Concentrates in brains, bones and teeth of carnivores. Higher levels found in predators. Behavior changes in mammals and decline of egg production in fowl is common.

HOST SENSITIVITY/SUSCEPTIBILITY:
Water fowl ingest lead shot - minimum lethal dosage is 16 mg/kg. TD$_{LO}$ subcutaneously in experimental rats is 150/kg. (lead chromate). At low concentrations, <10 ppm, compromised mammals, rodents are very susceptible.

**COMMENTS**

Is passed on through food chain.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: LINDANE

**HUMAN**

DISEASE OR EFFECT:

Acute symptoms include death. Vapors may irritate eyes, nose and throat

EPIDEMIOLOGICAL SIGNIFICANCE:

Suspected carcinogen. Poisoning through ingestion.

HOST SENSITIVITY/SUSCEPTIBILITY:

Acute dosage - 150 mg/kg body weight. $LD_{LO}$ is 840 mg/kg.

**VEGETATION**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:

Causes hepatic damage in experimental animals.

EPIDEMIOLOGICAL SIGNIFICANCE:

Suspected carcinogen.

HOST SENSITIVITY/SUSCEPTIBILITY:

$TD_{LO}$ orally in mice is 62 mg/kg.

**COMMENTS**

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **MERCURY** | |
| HUMAN | DISEASE OR EFFECT:<br>Acute dose may produce death within 10 days. Chronic doses produce kidney damage, muscle tremors, and brain damage.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Suspected carcinogen.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>$TD_{LO}$ inhaled by humans is 169 ug/$M^3$. |
| VEGETATION | DISEASE OR EFFECT:<br>Direct toxicity to plants; growth retardation in leaflets, defoliation, browning of veins, discoloration of flowers, general chlorosis. Potential toxicity is moderate.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Mosses are significant bioaccumulators. Widely used in pesticides. Enters atmosphere in gaseous and particulate forms.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Relatively high concentration necessary to affect plants. Older leaves are more susceptible. |
| ANIMAL | DISEASE OR EFFECT:<br>Brain lesion and neural degeneration. Signs in large animals are gastro enteritis and uremia. Eggshell thinning in birds and reproductive effects.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Increases accumulation of other metals. Affects reproduction, abnormal behavior. Concentrates in brain, liver, kidney, gonads, skeletal muscles affecting all functions.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Compromised individuals are susceptible to low concentrations. All individuals are highly sensitive to higher concentrations. Cattle are extremely sensitive. |
| COMMENTS | Toxicity depends on solubility of the compound as well as individual sensitivity. Organic mercurials release mercury slowly and toxicity is cummulative. Higher levels in predators indicate passage through food chain. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: METHYL ETHLY KETONE (BUTANONE)

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Irritating to eyes and mucous membranes. Narcotic in high concentrations.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 200 ppm in air or 590 mg/$M^3$ in water. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **NAPTHALENE** | |
| HUMAN | DISEASE OR EFFECT:<br>Acute affects from inhalation, ingestion and skin absorption are coma and death.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 10 ppm in air or 50 mg/$M^3$. |
| VEGETATION | DISEASE OR EFFECT:<br>May be phytotoxic at high concentrations.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Possible accumulation.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Actual sensitivity unknown. |
| ANIMAL | DISEASE OR EFFECT:<br>Small animals react with nausea, vomiting, severe depression and development of hemolytic signs. In cattle, disease reaction characterized by thickening and scaliness of skin, emaciation and eventual death.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>High sensitivity of cattle possibly affects food supply.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Cattle are the most sentitive. Toxicity increases with greater degree of chlorination, 5 mg/kg is toxic. Pigs tolerate levels below 150 mg/kg and sheep 500 mg/kg. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **NICKEL**

**HUMAN**

DISEASE OR EFFECT:

Dermatitis in more sensitive people. Soluble salts can cause vomitting and diarrhea.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.001 ppm in air or 0.007 mg/M$^3$ (Nickel Carbonyl) and 1 mg/M$^3$ (Metal and soluble compounds).

**VEGETATION**

DISEASE OR EFFECT:

Chronic exposure produces iron-deficiency chlorosis, necrosis, dwarfing, reduced yield. Potential toxicity is high.

EPIDEMIOLOGICAL SIGNIFICANCE:

High bioaccumulation potential.

HOST SENSITIVITY/SUSCEPTIBILITY:

Iron has ameliorating effects on nickel toxicity. 2 ppm available nickel is an accepted level of toxicity to many species, maximum allowable level in Illinois. Others accept 50 ppm as toxic concentration.

**ANIMAL**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**COMMENTS**

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **NITRITE**

**HUMAN**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Orally $LD_{LO}$ is 3 mg/kg.

**VEGETATION**

DISEASE OR EFFECT:

$NO_2$ - is toxic to some plants, especially as undissociated $HNO_2$, but $NO_2$ ion is more tolerated.

EPIDEMIOLOGICAL SIGNIFICANCE:

$NO_x$ in atmosphere may become enriched in plants and become significant source to herbivors.

HOST SENSITIVITY/SUSCEPTIBILITY:

Corn is particularly resistant but resistance decreases with decreasing pH; similarly for citrus and avocado at 20 ppm in nutrient medium, pea plants weren't injured and assimilated $NO_2$.

**ANIMAL**

DISEASE OR EFFECT:

Respiratory distress due to the formation of methemaglobin which results in anemic anoxia.

EPIDEMIOLOGICAL SIGNIFICANCE:

Repeated exposure results in abortion in cattle after 3-13 doses.

HOST SENSITIVITY/SUSCEPTIBILITY:

Lethal dosage for swine; sodium nitrite 88 mg/kg; potassium nitrite 20 mg/kg.
Lethal dose for cattle; 88-110 mg/kg sodium nitrite; 60 mg/kg potassium nitrite.

**COMMENTS**

Plants are considered safe for feeding livestock if they contain less than 1.5% potassium nitrite on a dry matter basis.

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| | NAME:<br>NITROBENZENE |
| HUMAN | DISEASE OR EFFECT:<br>Headaches, nausea, drowsiness, methemoglobinemia with cyanosis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 1ppm in air or 5 mg/M$^3$. |
| VEGETATION | DISEASE OR EFFECT:<br>Phytotoxic; Monochloric derivations much more toxic than pentachloro derivations.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Phytotoxicity reduces with increased chlorination. |
| ANIMAL | DISEASE OR EFFECT:<br>Vertigo and ataxia, nausea, vomitting, dyspnea, cyanosis, convulsion and death shown in small animals.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

TOXIN

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: NITROPHENOLS (m,o,p) | |
| HUMAN | DISEASE OR EFFECT:<br>CNS depression, methemoglobinemia, hyperthermia (p).<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>Uncouples phosporylation. Used by agriculture to eliminate mold and mildew on rubber and leather; used as a herbicide.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Metabolized by soil micro-organisms.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>No threshold infomation available. |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Lethal dose: intravenously in dogs is 10 mg/kg (p). |
| COMMENTS | |

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: PENTACHLOROPHENOL

| | |
|---|---|
| HUMAN | DISEASE OR EFFECT:<br>Acute dose may produce death. Chronic doses lung, liver, kidney damage and contact dermatitis.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT:<br>Phytotoxic; used as a herbicide.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Tolerance unknown. |
| ANIMAL | DISEASE OR EFFECT:<br>High mortality in newborne pigs and increased number of still births when sows are farrowed in treated crates.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Acute fatal dose for most species is 120-140 mg/kg. Chronic fatal dose for most species 30-50 mg/kg. $LD_{50}$ orally in experimental rats is 180 mg/kg. |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **PHENOL**

**HUMAN**

DISEASE OR EFFECT:

Acute effects include paralysis, death from respiratory failure or cardiac arrest. Renal and hepatic damage in chronic cases.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Average fatal dose is 15 g. Do not exceed 8 hours exposure to 5 ppm or 19 mg/M$^3$.
exposure to 5 ppm or 19 mg/M$^3$.

**VEGETATION**

DISEASE OR EFFECT:

Toxic to foliage as spray; vapor inhibits growth if applied to soil.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Unknown sensitivity level.

**ANIMAL**

DISEASE OR EFFECT:

Skin and mucuous membranes becomes white on contact. Effects include nausea, vomiting and severe abdominal pain, circulatory collapse.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

High mortality among exposed newborne.

**COMMENTS**

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: PHTHALATE ESTERS (DIBUTYL PHTHALATE) | |
| HUMAN | DISEASE OR EFFECT:<br>Ingestion may cause GI disturbances, affects the central nervous system causing headaches, tremor, drowsiness, convulsions, hypnosis and anesthesia.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Law order of toxicity.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Orally $LD_{LO}$ is 140 mg/kg. Do not exceed 8 hour exposure to 5 $mg/M^3$ in air. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>Produced non-transmissable changes in offspring of rats.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Limited experiments suggests low order of toxicity.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Administered to rats $LD_{LO}$ is 874 mg/kg. |
| COMMENTS | |

TOXIN

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: POLYCHLORINATED BIPHENYLS (PCB's)

HUMAN

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

May be absorbed through skin.

HOST SENSITIVITY/SUSCEPTIBILITY:

$TC_{LO}$ is 10 $mg/M^3$ when inhaled. Do not exceed 8 hour exposure to $1 mg/M^3$.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

Thinning of eggshells and feather loss in birds. High incidence of still births in seals in Puget sound. Reduced oyster shell growth. Drastic decline in production and hatchability of eggs in domestic hens.

EPIDEMIOLOGICAL SIGNIFICANCE:

Severe deformities in offspring of birds.

HOST SENSITIVITY/SUSCEPTIBILITY:

5 ppm in chickens reduced egg productions, 50 ppm reduced egg production and drastically reduced hatchability of fertile eggs within 14 weeks.

COMMENTS

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME SECONDARY AMINES | |
| HUMAN | DISEASE OR EFFECT:<br>Irritation to skin and mucous membranes.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 10 ppm in air or 18 mg/$M^3$ in water. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | **SELENIUM** |
| HUMAN | DISEASE OR EFFECT:<br>Dermatitis, G.I. Disturbances.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 0.2 $mg/M^3$. |
| VEGETATION | DISEASE OR EFFECT: Toxic concentrations of selenate can stunt growth, delay flowering, induce snow-white chlorosis. In selenite, toxicity turns leaves dark green, and reported cases of stem tumors and root lesions.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Plant may act as a vector and transfer Se to herbivores. May produce potentially hazardous bioaccumulation in aquatic systems.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Primary accumulators grow in seleniferous soils and may contain greater than 1,000 ppm. Low accumulators usually contain less than 30 ppm and include many weeds and most crop loss. |
| ANIMAL | DISEASE OR EFFECT:<br>Acute effects include nervous system involvement with blindness and head pressuring. Chronic effects include emaciation, lameness and hair loss.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>May be passed on to herbivores from plants in contaminated soils.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Deficiencies of cobalt and protein in the animal increases susceptibility. Length and rate of digestion alters sensitivity. Cattle are more tolerant than sheep. Daily intake of .25 mg/kg is toxic to both sheep and cattle, 44 mg/kg. to horses and 11 mg/kg. to pigs. |
| COMMENTS | Selenite or selenate salts are more toxic than selenium dioxide. Soils containing greater than 1200 ppm will produce plants toxic to herbivores. |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: SILVER & COMPOUNDS

**HUMAN**

DISEASE OR EFFECT:
Argyria or aryrosis (grayish-blue discoloration of skin). Salts may be irritating to skin and mucus membranes.

EPIDEMIOLOGICAL SIGNIFICANCE:
No serious toxic manifestations. Inhalation should be avoided.

HOST SENSITIVITY/SUSCEPTIBILITY:
Do not exceed 8 hours exposure to 0.01 mg/$M^3$.

**VEGETATION**

DISEASE OR EFFECT:
Accumulation in plants may result in toxicity to herbivores.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:
Normally <0.01 ppm found in plant tissue is classified as more toxic than Cd or Hg. Actual sensitivity unkonwn.

**ANIMAL**

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**COMMENTS**

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: SODIUM CHLORIDE

HUMAN

DISEASE OR EFFECT:

Effects blood pressure. Major toxic effects not a problem.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

$TD_{LO}$ orally is 8200 mg/kg. for 23 days. Rectally $LD_{LO}$ is 163 mg/kg.

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:

Ingestion of excessive quantities causes inflamed alimentary tract with production of gastroenteritis and diarrhea. When water is restricted salt intake may produce cerebraledema and nervous signs.

EPIDEMIOLOGICAL SIGNIFICANCE:

Significant when salt intake is not excessive but water intake is restricted.

HOST SENSITIVITY/SUSCEPTIBILITY:

Greater toxicity in summer than winter. Toxicity occurs in cattle in drinking water with 1.75% NaCl. Toxic dose is 2.2 g/kg. Horses are more susceptible than dairy cows in milk. Cows in milk are more susceptible than dry dairy cows, sheep and beef cattle.

COMMENTS

Major source is salt spread on highways.

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: STYRENE | |
| HUMAN | DISEASE OR EFFECT:<br>Irritating to eyes, mucous membranes; narcotic in high concentrations.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hours exposure to 100 ppm in air; do not become exposed to concentrations greater than 200 ppm in air. |
| VEGETATION | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **2,3,7,8 TETRACHLORODIBENZO - P - DIOXIN (TCDD)**

HUMAN

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

VEGETATION

DISEASE OR EFFECT:

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

ANIMAL

DISEASE OR EFFECT:
Death in rabbits 3-5 mi. outside area contaminated by escaped gas in chemical plant explosion in Sevesco, Italy.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

51.3 ppm. recorded in contaminated area of Sevesco. 35.7 mg. was toxic to 5 million guinea pigs. 1 billionth of its body weight administered to a monkey was a lethal dose.

COMMENTS

# AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: **THALLIUM**

**HUMAN**

DISEASE OR EFFECT: Acute dose can result in death from nausea, vomitting, diarrhea, tingling, pain in extremities, coma, convulsions. Chronic cases result in weakness, pain in extremities and loss of hair.

EPIDEMIOLOGICAL SIGNIFICANCE:

May be absorbed through the skin.

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.1 mg/$M^3$.

**VEGETATION**

DISEASE OR EFFECT: Highly toxic at low concentrations. Induces "Frenching" in tobacco. May interfere with K absorption by plants. Produces internal chlorosis.

EPIDEMIOLOGICAL SIGNIFICANCE:

May impact plants directly or through precipitation.

HOST SENSITIVITY/SUSCEPTIBILITY:

Less than 1 ppm induces "Frenching" Max. permissible level in soil is 0.25 ppm.

**ANIMAL**

DISEASE OR EFFECT:

Acute effects in small animals include diarrhea, salivation, vomitting, mucous membranes may ulcerate, Dyspnea, muscular weakness, convulsions may occur 1-4 days from onset. Chronic effects include skin lesions, hair loss, erythema and necrosis of skin . Large animals; alopecia.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

2.5 mg/lb is lethal to dogs.

**COMMENTS**

Would easily impact plants when transported via aerosols and droplets.

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: TOLUENE | |
| HUMAN | DISEASE OR EFFECT:<br>Narcotic at higher concentrations. May cause mild macrocytic anemia, but not leukopenia.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not exceed 8 hour exposure to 200 ppm in air. Do not become exposed to concentrations >300 ppm. |
| VEGETATION | DISEASE OR EFFECT:<br>Toxic to foliage at vapor phase.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>May be biosynthietic; product of plant metabolism<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Actual sensitivity unknown. |
| ANIMAL | DISEASE OR EFFECT: When ingested small animals react with nausea, vomitting, fixed pupils, ataxia , depression, coma. Inhalation results in acute conjunctivitis, nausea, vomitting, depression, cyanosis, weak pulse, followed by convulsions and collapse. In large animals repeated exposure results in depression of bone marrow and anemia.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

NAME: TOXAPHENE

**HUMAN**

DISEASE OR EFFECT:

Death in acute cases. Irritating to skin.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

Do not exceed 8 hours exposure to 0.5 mg/$M^3$.

**VEGETATION**

DISEASE OR EFFECT: Phytotoxicity itself is not an important factor. Potential bioaccumulation, aquatic plant concentrate toxaphene 5-12 fold from water.

EPIDEMIOLOGICAL SIGNIFICANCE:

Has approximately a 10 year half life if worked into soil.

HOST SENSITIVITY/SUSCEPTIBILITY:

**ANIMAL**

DISEASE OR EFFECT:

Small animals become restless, increased fasciculations muscle spasms, convulsions, fever followed by cyanosis depression, coma and death. Large animals become excited with grinding of teeth, dyspnea, tetany, frequent micturation.

EPIDEMIOLOGICAL SIGNIFICANCE:

HOST SENSITIVITY/SUSCEPTIBILITY:

**COMMENTS**

TOXIN

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: VINYL CHLORIDE | |
| HUMAN | DISEASE OR EFFECT:<br>Narcotic in high concentrations. Local frost bite if spilled on skin.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Forms carcenogenic PVC's.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Do not expose to concentrations exceeding 500 ppm. |
| VEGETATION | DISEASE OR EFFECT:<br>Death to foliage and growth abnormalities.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Possible metabolization by plants.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Actual sensitivity unknown. |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | |

## AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: **WATER** | |
| HUMAN | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| VEGETATION | DISEASE OR EFFECT: Importance of deposition on plant depends on time of day, pathogen or particulate matter. Water solubilizes particulate matter on foliage. Promotes spore germination and develops certain stages of foliar pathogens. Potentiates absorption of gaseous pollutants.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>Near-site significance.<br>HOST SENSITIVITY/SUSCEPTIBILITY:<br>Significant level -- when relative humidity becomes >75% |
| ANIMAL | DISEASE OR EFFECT:<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: |
| COMMENTS | A significant factor for all terrestrial vegetation proximate to cooling devices |

AEROSOL DRIFT DIRECT EFFECTS ASSESSMENT

| | |
|---|---|
| NAME: | ZINC |
| HUMAN | DISEASE OR EFFECT: Fumes may cause weakness, fever, nausea, vomitting, skin irritation; Ingestion of soluble salts can cause nausea, vomitting and purging.<br>EPIDEMIOLOGICAL SIGNIFICANCE:<br>HOST SENSITIVITY/SUSCEPTIBILITY: Do not exceed 8 hours of exposure to 2 mg/M$^3$ of zinc chloride fumes. |
| VEGETATION | DISEASE OR EFFECT: Soluble inorganic salts reduce growth, vigor, yield, quality. When deficient, small amounts of airborne Zn could be beneficial. Toxicity induces Fe-deficienty chlorosis in plants.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Act as an accumulator and vector of Zn to herbivores. High potential for bioaccumulation in aquatic systems.<br>HOST SENSITIVITY/SUSCEPTIBILITY: Peas and corn tolerant to excess Zn, mustard is sensitive. Increase in soil pH reduces Zn uptake by plants but below pH 5, availability of Zn increases rapidly. |
| ANIMAL | DISEASE OR EFFECT: Poultry show signs 1 hour after ingestion of lethal dose. Depression with ruffed feathers, diarrhea, progressive weakness and terminal convulsions. Cattle have chronic constipation and fall in milk yeild. Pigs become progressively weak and joints enlarge. Small animals have toxic convulsions and coma.<br>EPIDEMIOLOGICAL SIGNIFICANCE: Increases retention of other metals. Causes behavioral changes. Concentrates in liver, gonads, pancreas and kidney of birds.<br>HOST SENSITIVITY/SUSCEPTIBILITY: 20-40 mg/kg of zinc phosphide is toxic to small animals. 6-8 ppm in drinking water causes constipation in cattle. 1.0 g/kg administered to cattle and sheep causes toxicity. 200 g of zinc lactate fed to pigs over 2 months as a 0.1 0% solution causes arthritis |
| COMMENTS | |